JUNE, 1958

Commercial Fertilizer

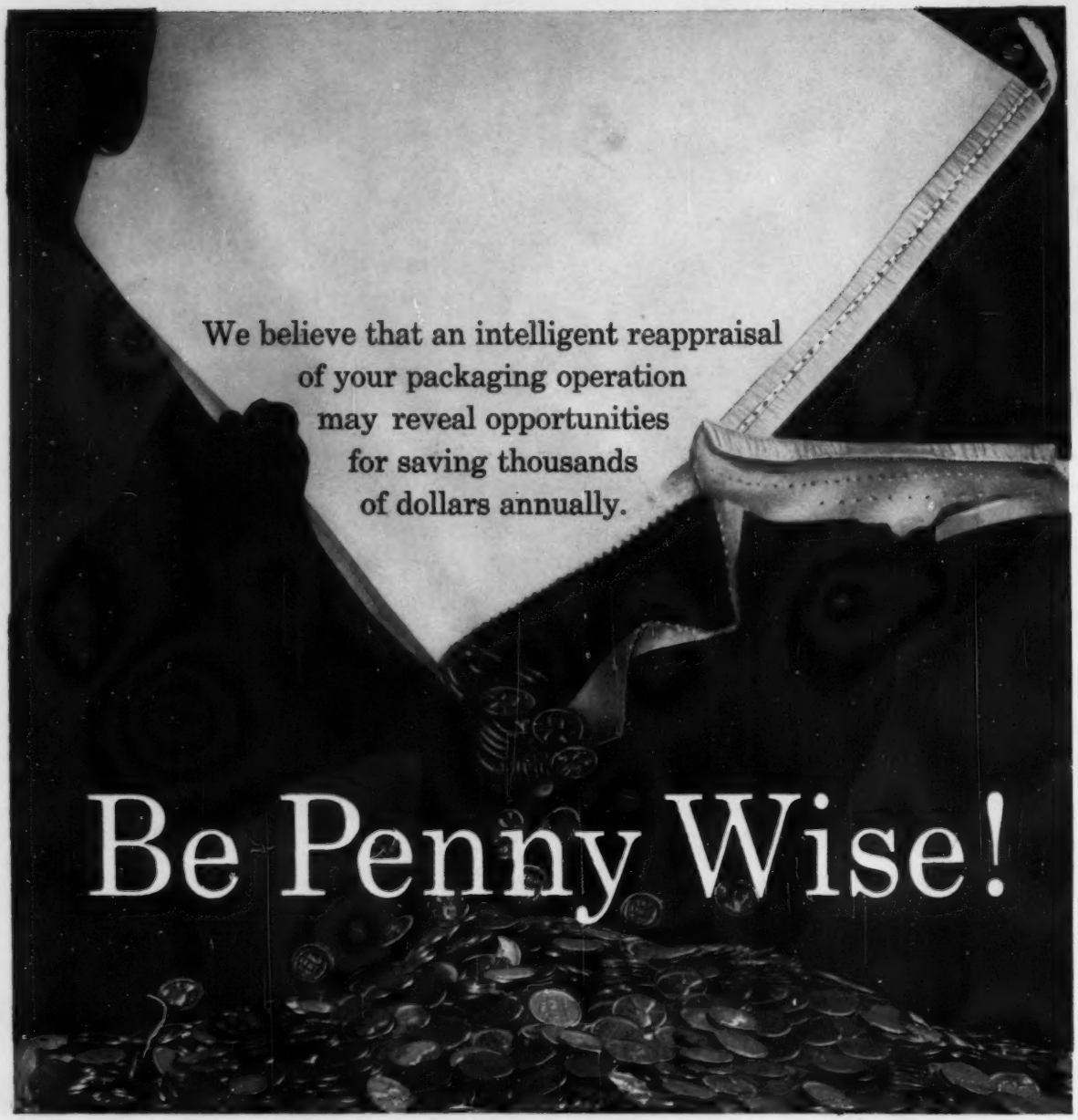
and PLANT FOOD INDUSTRY

Nitrogen Division Appreciates Your Business . . . . *See Page 19*

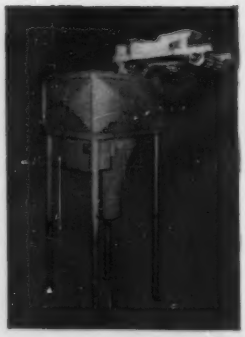
How to Sell More Fertilizers this Summer . . . . *See Page 20*

Technical Tips for Better Ammoniation . . . . *See Page 21*

Advertisement of NITROGEN DIVISION, ALLIED CHEMICAL



IN BUYING MULTIWALL BAGS NO SAVING IS TOO SMALL TO IGNORE!



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a new concept of service

To help you sell more fertilizer profitably

INTERNATIONAL

International Minerals offers an entirely new concept of service for the fertilizer manufacturer. Called FULL ORBIT SERVICE, this program is designed to embrace every facet of your business operations. Unmatched in the industry, it provides full-range assistance to help you move more mixed goods to your customers. In effect, this new concept of service puts our entire organization on your team — lets you take advantage of every resource to sell more merchandise at less cost . . . and with greater profit.

FULL ORBIT SERVICE is ready now. Build your plans for the coming year around this new, trend-setting program. Your International representative will be seeing you soon. He'll describe this dramatic new service specifically designed to increase your sales.

MINERALS *International* CHEMICALS

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

20 North Wacker Drive, Chicago 6, Illinois

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and PLANT FOOD INDUSTRY

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Commenting Freely

by BRUCE MORAN

Perhaps we are unduly prejudiced by the fact that the farmer is on the upside of the economic situation, is recovering and fast. That is, after all, the bread and butter of our industry. But I think we all look on the events in Washington with a sense of nation-wide responsibility. We are also manufacturers. We are also, we hope, good citizens.

So it is without bias that we decry the inflationary talk, the new New Deal activity, the strictly political hoopla carried on in the name of recession remedies.

Inflation has a way of looking like a normal way of life. And a lovely dream it is that the only way is up. But Europe can tell you otherwise. Germany remembers, for example, when they simply added the word "million" to one mark notes, to keep up with the change in value . . . and you could hardly buy a loaf of bread for your newly elevated "million marks."

Boom has been loaded on top of boom for so long that we have worked ourselves into a financial spot, both as individuals and as the Government of the United States. We are now in the process of working ourselves out. But if we ignore economics in favor of politics we will be building up to another dip—which next time might well turn out to be a depression, instead of the mild levelling-off we know today in most parts of the land.

Let's all do everything we can to keep sanity at the helm in Washington, for the long-range good of everybody.

ONE FITS EXACTLY

It pays to buy nitrogen with care. Select a supplier who fits your requirements exactly – as one key fits a lock.

Before you buy, check these points: Does the supplier offer top quality nitrogen products? Are they readily available even during peak seasons? Moreover, can you get prompt, reliable, low-cost delivery?

Sinclair is in a position to fill all of your requirements – exactly. We can speed top quality nitrogen products to you from Hammond, Indiana – the center of the Midwest's transportation system.

Vast storage facilities for anhydrous ammonia and nitrogen solutions assure delivery where and *when* you need it. So make Sinclair your key source!

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This Free Service Has Helped Phillips 66 Customers Save Thousands of Dollars. Yes, these men shown above are literally saving Phillips mixer customers thousands of dollars. By employing the "brains" of the electronic computer formulating machine, they help fertilizer mixers arrive at more effective and lower cost formulations.

This *extra* individual service costs you nothing. All you do is furnish your Phillips *66* fertilizer field man the analysis of your materials, their cost, and the grades you wish to produce. Phillips technical service section applies these facts to production standards on heat, moisture, ammonia-holding capacity, nutrient value and weight. This information is then fed into the electronic computer which figures the most economical and effective formulation in a matter of seconds.

If you have production problems—or if you think you are not getting the most economical formulations—call your nearest Phillips *66* office (listed below, opposite page). They'll be glad to give you complete information on the ways this Electronic Computer Service can help you save time and money.

THIS SERVICE SAVED ONE CUSTOMER $15,000

One of our customers was concerned about narrowing profit margins. He gave his Phillips *66* representative the analysis of his materials, the grades and the amounts of each he wished to produce. Through the use of Phillips electronically-computed formulations, his savings ranged from 30¢ to $1.50 a ton on materials, or a cost reduction of $15,000 a year.

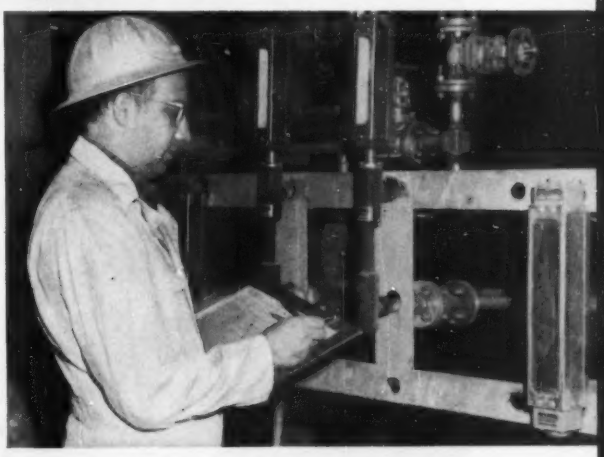
creates sales and profits for you

with the new Phillips 66
PILOT PLANT

The services of our new Phillips *66* Pilot Plant are available *free of cost* to help you cut formulation costs and improve the quality of your products.

Continuous pilot plant studies are made on new and more economical formulations that save you money on your ingredients. Research and specific processing problems are translated into terms of commercial production . . . helping you eliminate the necessity of "hit or miss" experiments that consume costly manhours.

The new Phillips *66* Pilot Plant and Phillips *66* Electronic Computer Service team up to provide progressive, practical "know-how" that lets you cut manufacturing costs while turning out better quality products.



For your high quality fertilizers, look to Phillips for a dependable source of supply . . .
NITROGEN SOLUTIONS, ANHYDROUS AMMONIA, AMMONIUM NITRATE, AMMONIUM SULFATE and TRIPLE SUPERPHOSPHATE.

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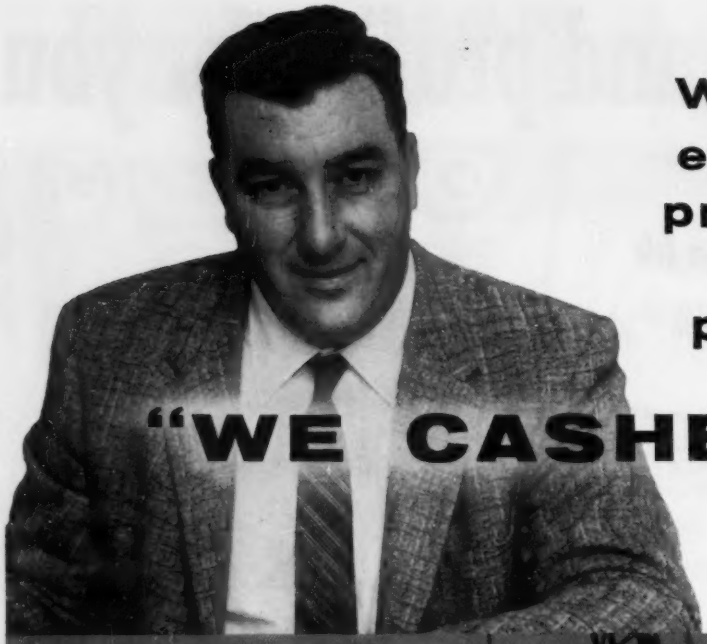


With ever-improving product and production

"WE CASHED IN ON

reports Damon Robinson
Manager, Plant Food Division
Kelly-Weber & Company, Inc.
Lake Charles, La.

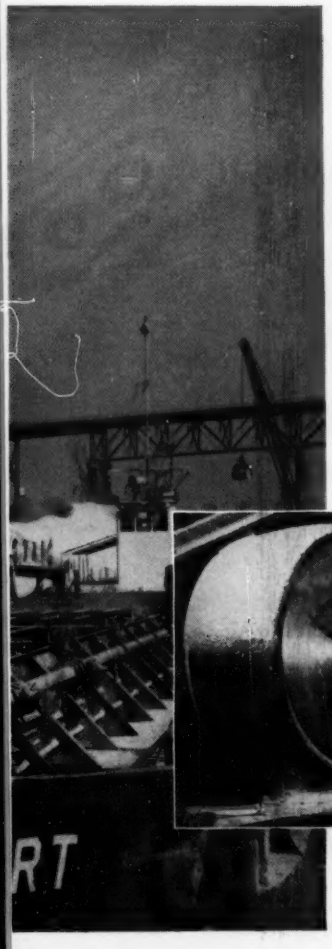
International's Charter Carports of Triple dock at the Port of Lake Charles "just a stone's throw" from the Kelly-Weber plant at Westlake. Triple is transferred by dragline to dump trucks. At the plant, Triple is elevated from hopper into storage area. In addition to the triple, all phosphate rock (storage piles in the background) and sulfuric acid are shipped by water.

60 years with the company is the record of Arthur Gayle, President and General Manager of the entire Kelly-Weber organization. He maintains a special interest in operations of the fertilizer division.

Best selling grades . . . such as 5-20-20, 10-20-10, and 12-12-12 for rice . . . are formulated with International's Triple Super. The Westlake plant formulates 15 different grades of fertilizer.

A GROWING MARKET"

"And International's Charter Carports of Triple help us use our 'water life-line' to best advantage"



For some 32 years, the Kelly-Weber plant at Westlake, La., has been making use of their Lake Charles "water life-line."

"We get our Triple by carport from International (at Tampa, Fla.)," says Plant Manager Damon Robinson. "Their regular carport shipments help us meet peak season schedules . . . no worry about unloading or handling, either."

The Westlake plant is closely related to the ship channel that connects Lake Charles and the Gulf of Mexico. Construction of both was completed in 1926 . . . and the first ocean-going vessel to use the channel carried a load of fertilizer.

In those early days, Arthur Gayle managed the fertilizer division. Together with his son, W. Gedge Gayle, and Damon Robinson, he developed a growing market for Weber-King brand fertilizers. An acidulation plant was built in 1944 . . . a granulation unit installed in 1954. International's Triple Super is an important ingredient in the high-analysis, granular fertilizers their farm customers require.

If you're not already using International's Triple Super investigate now. Learn how you too can benefit from International's superior quality triple . . . guaranteed minimum 46% APA . . . and service tailored to meet your requirements. Write or wire your International man for full details.

Basic goods are weighed into batch hoppers by Cleveland McCraney. In addition to operations at the Westlake plant, non-nitrogenous grades are produced in plants at Lake Charles and Eunice, La.

Strong demand for Weber-King fertilizers carries over from planting season into top-dressing, then fall pasture seasons. Sales area covers southwestern Louisiana and southeastern Texas.

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

PHOSPHATE CHEMICALS DIVISION . . . . . 20 N. WACKER DRIVE, CHICAGO 6, ILL.

JUST AROUND THE CORNER *by Vernon Mount*

JUNE is the month when the turning point is supposed to become visible, and decisions are made about turning loose inflationary measures, calculated to check recession. And as we crept up on June there was less and less enthusiasm for these ideas.

SLOW ACTION is part of the reason. Most of the things the Government can do under these circumstances are things that take too long to get down to the pocketbook level of the average citizen. And a realization is slowly dawning that when we end this recession we have inflation to fight. The more inflationary measures we use, the tougher the fight.

TALK may well be the end of most of the ideas which were flaunted on flaming swords not so long ago. We get excited in this country, but we simmer down. Meanwhile, of course, there are men out of work...a lot of them. Don't forget that.

Yours faithfully,

Vernon Mount

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Produced at Whitestone, Georgia

Crushed and Screened by Modern Machinery

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Special Problem? New multiwall developments may be the answer. Write Raymond Bag Corporation, Research & Development Division, Middletown, Ohio.

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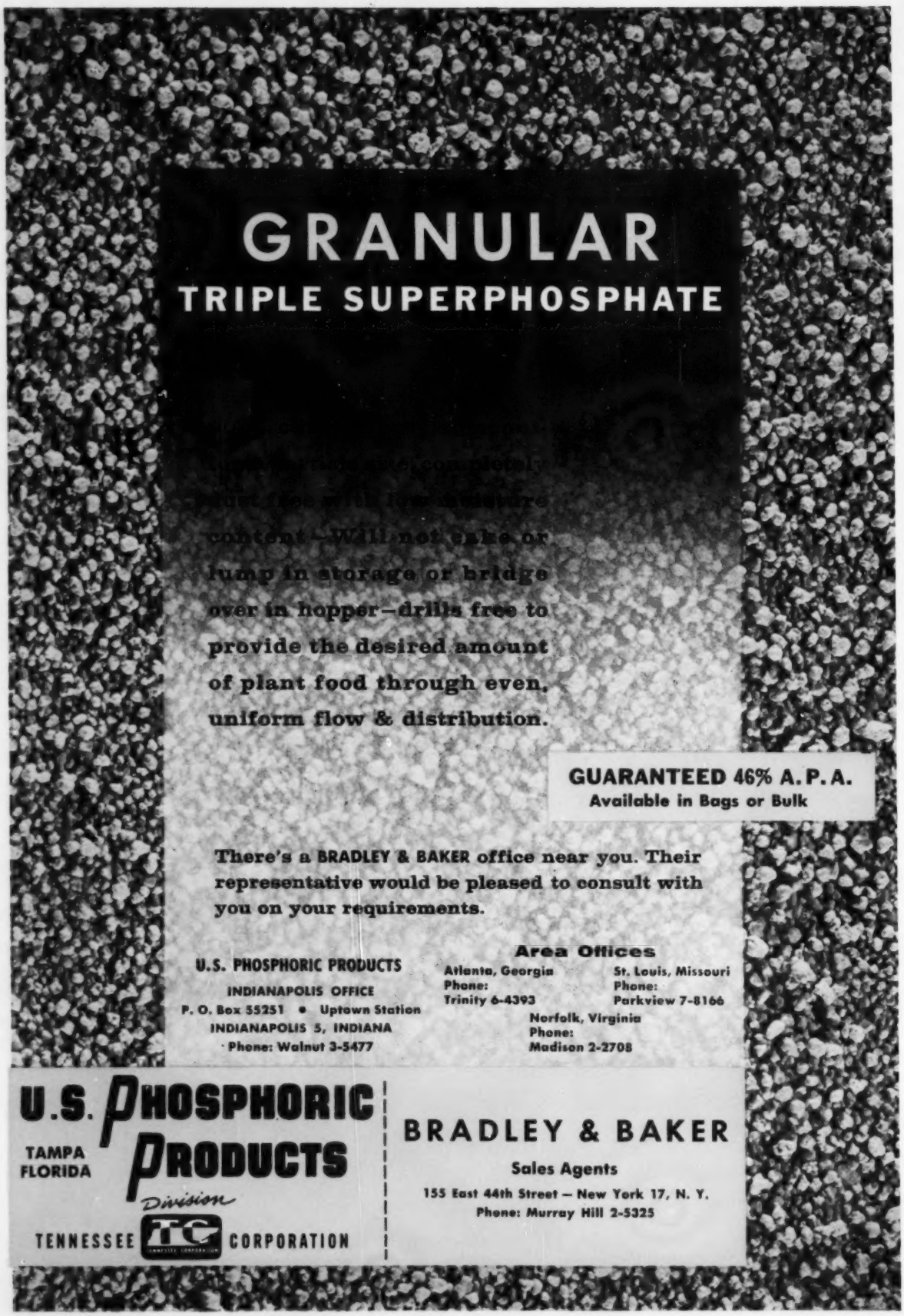
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content—Will not cake or
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over in hopper—drills free to
provide the desired amount
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Joe Sharp, Director of Technical Service, Agricultural Chemicals Division, Spencer Chemical Company, supplies . . .

Answers To Your Questions About

NEW SPENSOL® GREEEN

(TRADEMARK)

Q How did you arrive at the fact that new SPENSOL GREEEN is 40% less corrosive?

A This was figured on a corrosion comparison of the weight loss of mild steel test plates, 2" x 3", each containing a weld bead. If we had cut the plates down to the weld bead, the percentage loss of weight could have been as much as 500%, since corrosion attacks most severely in the weld area.

It's all relative, but when the solution eats through the weld bead in the tank, it's *100% no good.* With new SPENSOL GREEEN, tanks, sparger and distributor last far longer.

Q Have you compared new SPENSOL GREEEN with other brands, or only with old SPENSOL?

A In our testing, we compared the corrosion properties of six competitive ammoniating solutions and SPENSOL with new SPENSOL GREEEN. Here are the results of our most recent tests:

Sample Number	Corrosion (Inches Per Year)	Variation From SPENSOL GREEEN
1	.021	91%
2	.024	118%
3	.300	2,630%
4	.022	100%
5	.234	2,030%
6	.017	54.5%
Old SPENSOL	.017	54.5%
SPENSOL GREEEN	.011	—

As you can see, the "40% less corrosive" is a conservative statement.

Q Does SPENSOL GREEEN cost more than other popular ammoniating Solutions?

A No. So why buy ammonium nitrate solutions that give you less corrosion control when SPENSOL GREEEN costs no more?

Q Will I have to change my mixing process to use new SPENSOL GREEEN?

A No. You use SPENSOL GREEEN the same way you would use any ammonium nitrate solution. It can be added to the ammoniator, whether your plant is set up for continuous production or a batch process operation. Because the basic specifications and mixing properties of SPENSOL GREEEN are still the same, the handling, measuring and metering are the same as with SPENSOL.

Q Can I count on SPENSOL GREEEN to decrease my down time during peak seasons?

A Certainly! Leaks caused by corrosions are a principal reason for plant shutdowns. SPENSOL GREEEN should end much of this trouble.

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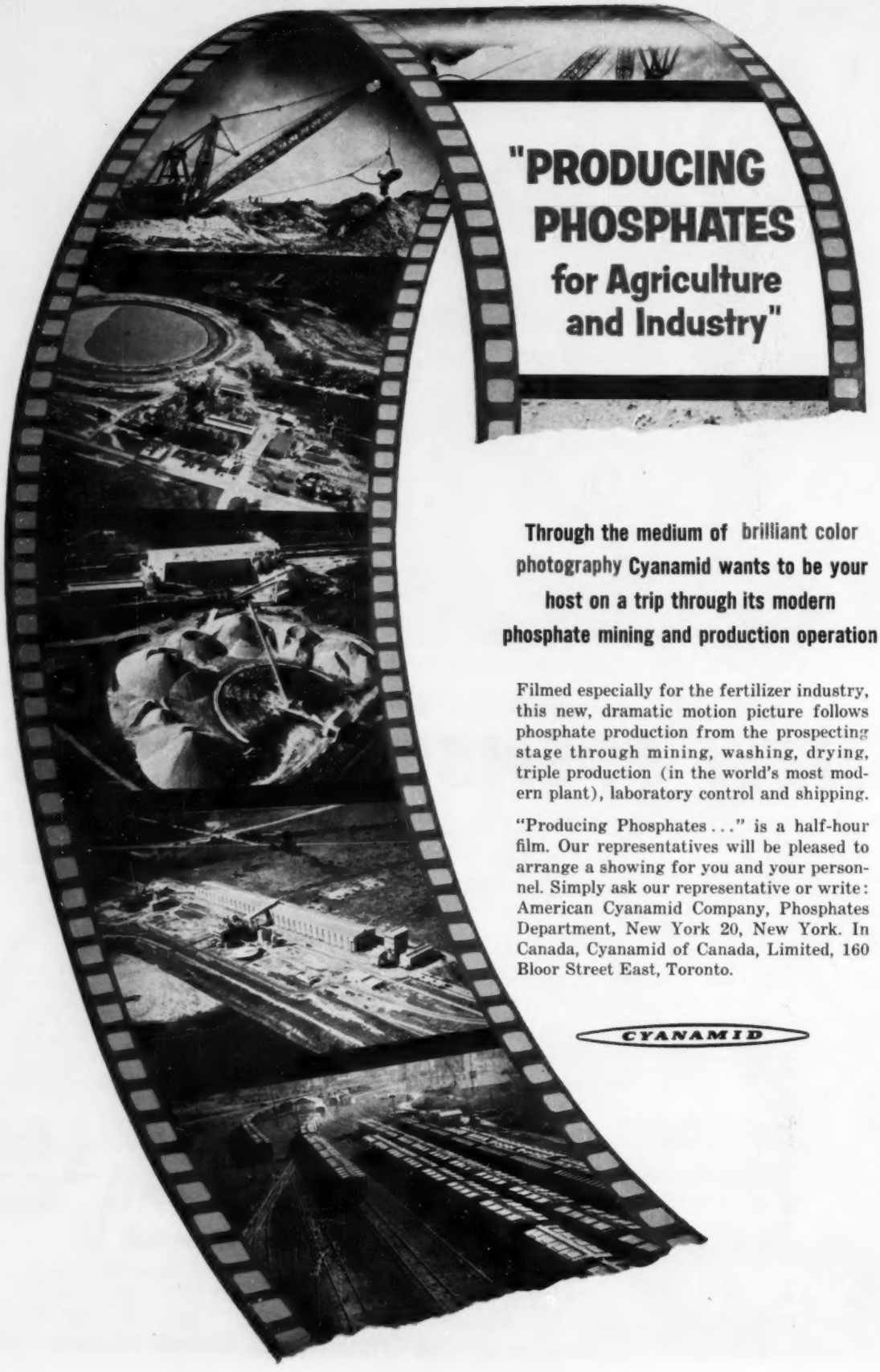


"PRODUCING PHOSPHATES for Agriculture and Industry"

Through the medium of brilliant color photography Cyanamid wants to be your host on a trip through its modern phosphate mining and production operation

Filmed especially for the fertilizer industry, this new, dramatic motion picture follows phosphate production from the prospecting stage through mining, washing, drying, triple production (in the world's most modern plant), laboratory control and shipping.

"Producing Phosphates . . ." is a half-hour film. Our representatives will be pleased to arrange a showing for you and your personnel. Simply ask our representative or write: American Cyanamid Company, Phosphates Department, New York 20, New York. In Canada, Cyanamid of Canada, Limited, 160 Bloor Street East, Toronto.

CYANAMID

Arcadian® News

Volume 3 | For Manufacturers of Mixed Fertilizers | Number 6

We Appreciate Your Business

Good customers are the greatest asset of any company. Nitrogen Division, Allied Chemical, is proud of its customers in the fertilizer industry. The end of another fertilizer year is an appropriate time to say THANK YOU for purchasing your nitrogen requirements from us. We appreciate your business and will continue to do our best to deserve your confidence and your loyalty.

We produce for you the most complete line of nitrogen products available for manufacturing fertilizers. You have many different ARCADIAN® Nitrogen Solutions from which to select those best suited to your ammoniation methods and equipment.

Our plants at Hopewell, Virginia, South Point, Ohio, and Omaha, Nebraska, are conveniently located to serve many areas. We maintain the largest fleet of tank cars in the industry and do our utmost to keep our delivery facilities operating at top efficiency. When you need ammoniation advice or formulation assistance, you get it promptly without charge from our experienced technical service staff. The research that originated Nitrogen Solutions is constantly at work, developing new methods and materials to help you manufacture better fertilizers.

Your sales are supported by powerful advertising to sell mixed fertilizers. Farm magazine advertisements, radio broadcasts and billboards, sponsored by Nitrogen Division, Allied Chemical, carry the mixed fertilizer story to millions of farmers.

We look forward to a mutually pleasant and productive relationship with you during the years ahead. If you have suggestions as to how we can serve you better, let us hear from you. If you plan to be in White Sulphur for the Convention, stop by the Nitrogen Division, Allied Chemical, suite at the Greenbrier and let us tell you in person how much we appreciate your business.

Green fields speak as loud as big yields to many farmers. When the corn leaves lap in the row, the oats are shoulder-high, and the pasture is knee-high to cows, any farmer loves to show off his crops. That's a good time to go and see him, if he uses your fertilizer. It's also a good time to show his crops to other farmers.

One farmer applied a double dose of fertilizer to his corn by mistake. He made a big profit on the extra tonnage of silage produced by the extra fertilizer. But he didn't tell his neighbors about yields and profits. He told them how tall and green his corn grew during a dry season. He knew he made money from fertilizer. This was dramatized to him by the lush, green crop right before his eyes all summer.

It will pay you to take advantage of a farmer's pride in a good crop grown with your fertilizer. He can be an excellent salesman and demonstrator for you. Farm calls, when crops are green and growing, can produce plenty of success stories. The best way to tell these success stories is to take other farmers to see them. This enthusiasm sells fertilizer.

Many farmers, who firmly believe that fertilizer pays, will never bother to measure yields to figure out their actual profits. One way to get them to measure yields is to conduct a contest. Then the chore of measurement becomes important. Getting him to check yields is important to you, because this stresses the benefit, not the price, of fertilizer.

Every good farmer likes to grow good crops. Every good farmer likes to look at good crops. Take advantage of these two powerful urges this summer. It's as good as golf for getting a fertilizer man out into green fields and sunshine. And it probably makes a lot more money!

IN THIS WORLD ...© by Crosier
WHEN BUFFALOS ROAMED THE WEST, THE WHOLE PRAIRIE WAS THEIR RANGE...
BUT OUR CATTLE MUST FEED ON THE SAME PASTURE YEAR IN AND YEAR OUT... AND THE GRASSES ARE GROWING THIN FROM INTENSIVE GRAZING!
EROSION CAN BE PREVENTED...
TODAY, A FERTILIZED PASTURE PRODUCES 4 TO 5 TIMES AS MANY POUNDS OF BEEF AS AN UNFERTILIZED PASTURE... WHY? FERTILIZATION GREATLY INCREASES GROWTH AND PROTEIN CONTENT OF GRASS.
FERTILIZER GIVES SOIL THICK, VIGOROUS GRASS COVER... PREVENTS FORMATION OF GULLEYS AND SOIL LOSS BY EROSION.

Here is another Nitrogen Division, Allied Chemical, service to the fertilizer industry. This is one in a series of educational news features now being released to more than 1,000 newspapers reaching more than 5,000,000 subscribers.

NOW is the time to sell PASTURE FERTILIZERS

Livestock farmers are making money today and the biggest net profits are being made where pastures are well fertilized to feed the animals at low cost. These cud-chewing harvesters save lots of labor, and get top feed value out of the lush crops they pick up and stow away.

Pasture improvement is a good market to provide sales and profits for fertilizer men between row-crop rush seasons. Good farmers fertilize pastures several times a year. Right now, in June, after the first spring flush of growth and grazing is gone, is a good time to fertilize pastures to produce green feed for summer. This is true for both permanent pastures and special summer grazing crops.

High-nitrogen mixed fertilizers are the most practical and profitable product to make pastures make money for farmers and fertilizer men. Pastures used to get nothing but a little manure. Then they got some superphosphate. Practical farmers also used straight nitrogen. They tried low-nitrogen mixed fertilizers, and then they found that mixed fertilizers, like 10-10-10, gave even better results. Progressive farmers have been getting exceptional grazing with high-nitrogen fertilizers in the 2-1-1 ratio, either in mixed fertilizer alone, or as mixed fertilizer plus nitrogen top-dressing. It will pay you to promote 2-1-1 ratio fertilizers, and get the entire sale in one bag.

Actually, pasture grass is like corn in its plant food needs. Because corn is actually a grass, you can see how this makes sense. Corn needs 160 pounds of nitrogen, plus 80 to 120 pounds of phosphate and potash per acre to make a 100-bushel crop. Pasture grass can produce just as much feed per acre as corn. But, to do it, pasture grass needs as much plant food as corn. High-nitrogen mixed fertilizer is good corn fertilizer; it is also good pasture fertilizer. You'll make money—and friends—by selling 2-1-1 and 1-1-1 fertilizers for grass.

Corn is the biggest fertilizer user among all crops today. But pastures offer the biggest potential for fertilizer sales. Every section of the country has pastures, and all pastures need fertilizer. There are more acres of pasture and hayland than of any other crop. Some of your customers know it pays well to give pastures plenty of fertilizer. They can help you sell their neighbors. Pasture tours this summer can fill your dealers' stores with customers in the off season. Here are some typical results, telling the story of pasture profits with high-nitrogen mixed fertilizer—

"Native pasture with no lime or fertilizer produced the feed equivalent of 1,000 pounds of grain per acre. With lime and fertilizer, an acre of pasture produced the equivalent of 2,400 pounds of grain."

"Grass, with 250 pounds of 12-12-12 per acre, produced beef gains at a cost of 7 cents per pound. With the equivalent of 150 pounds of 18-12-12 per acre, this grass produced beef at a cost of 5½ cents per pound."

"Mixed pasture, fertilized with plenty of nitrogen, phosphorus and potash, gave high-producing cows everything they needed for top milk flow. One cow produced 4,600 pounds of milk in 84 days on this pasture alone, without losing weight."

"Plenty of 1-1-1 ratio fertilizer (500 pounds of 12-12-12 per acre) more than doubled pasture yields, with dry weight recorded at 3 tons per acre. Fertilizer averaged $18 per acre, and profit, over fertilizer cost, $63 per acre."

"Heavily-fertilized grass, getting 400 pounds of nitrogen in a 4-1-1 ratio fertilizer, produced 8,900 pounds of dry weight feed per acre, containing 1,790 pounds of protein. The grass averaged more than 20% protein."

Technical Tips

PROPERTIES OF SUPERPHOSPHATE THAT INFLUENCE AMMONIATION

The properties of superphosphate which have an important influence on ammoniation are: particle size, free acid content, water content, and porosity.

Small particle sizes will absorb more ammonia than large particle sizes. When the particles of superphosphate are irregular in size, the larger sizes may absorb only half as much ammonia as the smaller sizes. Under plant conditions, ammonia may penetrate to the center of particles no larger than 40-mesh, but at 30-mesh and larger there is much less ammonia take-up.

Ammonia take-up is also reduced when agglomeration of all ingredients has begun before all the ammonia has been added. Ammoniation cannot occur when the superphosphate is imbedded so deeply in the pellet that it is beyond the reach of the ammonia.

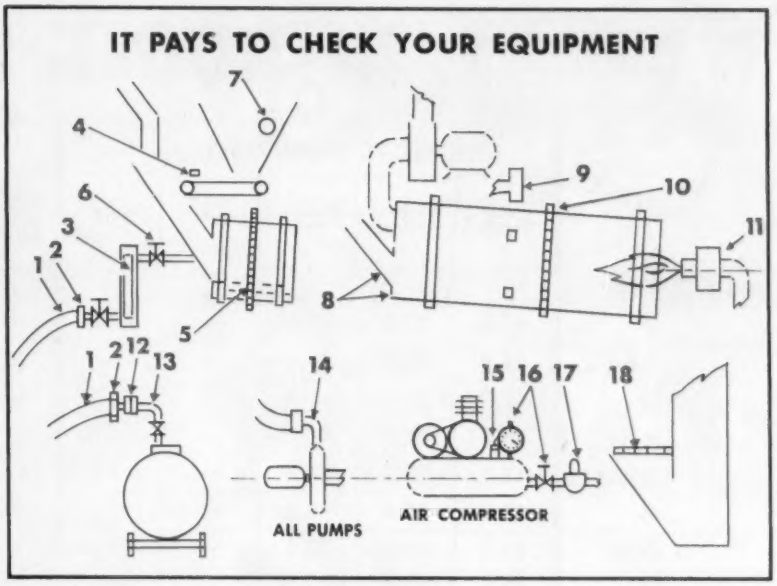
In most superphosphates, the influence of free acid on ammoniation can be accurately calculated. 20% superphosphate with a high acid content will absorb about 0.6 pound more ammonia per unit of P_2O_5 than superphosphate with a low acid content will absorb.

The amount of water in superphosphate or in the total mixture has some direct influence on ammoniation. Indirectly, it can have an important influence. The velocity of absorption of ammonia drops off if the moisture content of superphosphate is below about 40%. On the other hand, excessive moisture in the mixture may result in premature granulation or agglomeration, thereby retarding absorption of ammonia.

The long-held ammoniation rate of 3 pounds of ammonia per unit of P_2O_5 in 20% superphosphate was low because of equipment and techniques and not because of properties of superphosphates. Ammoniation rates were more than doubled when simple changes were made to permit uniform mixing of the ammoniating medium as it enters the mass and also to provide for reacting the ammonia gas that is generated as the temperature of the mass increases.

One unit of P_2O_5 in 20% superphosphate has been made to readily accommodate 5½ to 6½ pounds of free ammonia, without the aid of acid or the loss of nitrogen. Much good fertilizer is being made with ARCADIAN® Nitrogen Solutions supplying 1 unit of nitrogen for each 2 units of P_2O_5.

Triple superphosphates have shown an ability to absorb from 50 to 60% as much ammonia per unit of P_2O_5 as does 20% super, or from 3.5 to possibly 4.0 pounds of ammonia per unit of P_2O_5.



CHECK NOW

Here are some of the points to check to insure efficient operation and safeguard men and machinery:

Repairs	OK		
☐	☐	1	Hose and pipe for wear or corrosion. Note condition of supports.
☐	☐	2	Hose and pipe connections. Are they secure? Are they stainless steel?
☐	☐	3	Condition of float in rotometers.
☐	☐	4	Accuracy of all weighing equipment including rotometers.
☐	☐	5	Distributor pipes for corrosion and wear.
☐	☐	6	Valves for leakage on lines handling solutions and acids.
☐	☐	7	Material bin indicator.
☐	☐	8	Drying, cooling and ventilating equipment for air leaks, corrosion and dust accumulation.
☐	☐	9	Beaters on driers, mixers and other equipment for excessive wear.
☐	☐	10	Condition of guards on belts, chains, gears and all moving parts.
☐	☐	11	Burner unit and controls on dryer equipment for leaks and proper adjustment.
☐	☐	12	Unloading hose connections. Especially note conditions of threads.
☐	☐	13	Hose kinks. Use elbows to eliminate connections where hose kinks might appear.
☐	☐	14	Hose pressure. Test hose for at least double normal working pressure.
☐	☐	15	Air receiver. Drain and make sure filter is given adequate maintenance.
☐	☐	16	Air receiver, safety valve, pressure gauge and shut-off valve for corrosion and operating condition. Replace if necessary.
☐	☐	17	Pressure regulator. Be sure it is operating properly.
☐	☐	18	Condition of grill over pits. Also check ladders and stairways.

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	CHEMICAL COMPOSITION %						PHYSICAL PROPERTIES		
	Total Nitrogen	Anhydrous Ammonia	Ammonium Nitrate	Urea	Water	Neutralizing Ammonia Per Unit of Total N (lbs.)	Approx. Sp. Grav. at 60°F	Approx. Vap. Press. at 104°F per Sq. In. Gauge	Approx. Temp. at Which Salt Begins to Crystallize °F
NITRANA®									
2	41.0	22.2	65.0	—	12.8	10.8	1.137	10	21
2M	44.0	23.8	69.8	—	6.4	10.8	1.147	18	26
3	41.0	26.3	55.5	—	18.2	12.8	1.079	17	-25
3M	44.0	28.0	60.0	—	12.0	12.7	1.083	25	-36
3MC	47.0	29.7	64.5	—	5.8	12.6	1.089	34	-30
4	37.0	16.6	66.8	—	16.6	8.9	1.188	1	56
4M	41.0	19.0	72.5	—	8.5	9.2	1.194	7	61
6	49.0	34.0	60.0	—	6.0	13.9	1.052	48	-52
7	45.0	25.3	69.2	—	5.5	11.2	1.134	22	1
URANA®									
6	42.0	19.5	66.3	6.0	8.2	9.3	1.178	10	34
10	44.4	24.5	56.0	10.0	9.5	11.0	1.108	22	-15
11	41.0	19.0	58.0	11.0	12.0	9.2	1.162	10	7
12	44.4	26.0	50.0	12.0	12.0	11.7	1.081	25	- 7
13	49.0	33.0	45.1	13.0	8.9	13.5	1.033	51	-17
15	44.0	28.0	40.0	15.0	17.0	12.7	1.052	29	1
U-A-S®									
A	45.4	36.8	—	32.5	30.7	16.2	0.925	57	16
B	45.3	30.6	—	43.1	26.3	13.5	0.972	48	46
Anhydrous Ammonia	82.2	99.9	—	—	—	24.3	0.618	211	—

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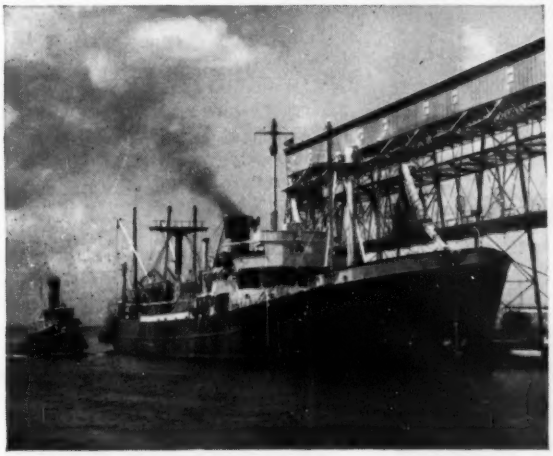

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NPFI Convention

to be held June 15-18 at the Greenbrier

Upper photograph shows center portion of main building at the Greenbrier. Picture below is steps in the garden leading up to the Old White Club.

Fred C. Scribner, Jr., under secretary of the Treasury, will be principal speaker at the annual meeting of National Plant Food Institute at The Greenbrier, White Sulphur Springs, W. Va., June 15-18. He will speak at the morning session on June 17.

Other prominent features on the program will include two panels on "Changing Farmers' Attitudes Toward Fertilizer" and "Changing Farmers' Fertilizer Practices" plus a time-lapse motion picture on "Watching Fertilizer Work" by the nationally-known producer John Ott of Winnetka, Ill.

NPFI officers estimate the attendance at approximately 1,000 fertilizer manufacturers, scientists, and other agricultural leaders.

Meetings of the Institute's Executive Committee and Board of Directors are scheduled for June 15 and a meeting of the Board will also be held on June 18.

The annual business meeting of the membership will be held at the morning session on June 16.

John A. Miller of Louisville, Ky., president of the Institute, will preside at the convention sessions.

On Monday, June 16, the program will feature a panel discussion on "Changing Farmers' Attitudes Toward Fertilizer" with Dr. M. S. Williams, chief agricultural economist of the Institute, speaking on "Farmers' Present Attitudes"; Dr. Webster Pendergrass, dean of the College of Agriculture, University of Tennessee, on "What Can State Agricultural Colleges Do?"; and W. E. McGuirk, chairman of National Plant Food Institute Special Study Committee, on "What Can Industry Do?". The panel will be followed by a presentation "What is the National Plant Food Institute Doing?" featuring brief regional reports on the subject by Dr. Richard B. Bahme, Western District representative;

JOHN A. MILLER

NPFI president will preside at convention business sessions

RUSSELL COLEMAN

Executive vice president of Institute will present Soil Builders awards

W. R. ALLSTETTER

NPFI vice president will introduce panel members at Monday morning session

Zenas H. Beers, Midwest Regional director; Dr. Samuel L. Tisdale, Southeast Regional director; Dr. Robert L. Beacher, Southwest Regional director; Dr. Willard H. Garman, Northeast Regional director; and F. Todd Tremblay, Pacific Northwest District representative. W. R. Allstetter, vice president of the Institute, will introduce the panel members. The annual business meeting will follow.

In the afternoon, a panel discussion will be conducted on "Changing Farmers' Fertilizer Practices" sponsored by the Institute's Research and Education Committee, with A. H. Bowers as chairman and moderator. Other speakers and subjects for the panel are: Orville Buerge, Buerge Brothers, Harrisonville, Mo., on "The Dealer's View"; J. W. Clark, Dane County (Wisconsin) agent on "The County Agent's View"; and Harry Rash, president, First National Bank, Thayer, Kans., on "The Banker's View."

On Tuesday, June 17, the session will open with a film presentation on "The Salesman," a Fortune film production, followed by the time-lapse film presentation by Mr. Ott. A memorial resolution will be presented by the chairman of the Institute's Memorial Committee, and the feature address of the session will be delivered by Mr. Scribner.

The annual banquet will be held Tuesday evening, June 17, at which Dr. Russell Coleman, executive vice president of the Institute, will present scrolls to the two winning editors in the Sixth Annual Nationwide "Soil Builders Award for Editors" contest, and following will be an outstanding entertainment program.

A special ladies' program will include: A garden party, film presentation on "Flowery Fantasy" by Mr. Ott, tennis and golf tournaments, bridge and canasta party, and golf putting contest.

A. H. BOWERS

Industry representative from Swift & Co. to moderate Monday afternoon forum

Convention Committees

Chairmen of the various committees which will supervise the special events at the Third Annual

M. S. WILLIAMS

Institute's chief agricultural economist will speak on farmer attitudes

WEBSTER PENDERGRASS

Dean of Tennessee Agriculture College represents educators on Attitudes panel

WILLIAM E. MCGUIRK, JR.

Davison Chemical president is Monday morning panelist for industry

ZENAS H. BEERS
Midwest regional director for NPFI will report on a panel session

SAMUEL L. TISDALE
Southeast regional director for Institute will be panel member

ROBERT L. BEACHER
Southwest regional NPFI director is also a panel reporter

WILLARD H. GARMAN
Institute's Northeast regional director to take part in panel report

RICHARD B. BAHME
NPFI's Western district representative will appear on Monday morning forum

F. TODD TREMBLAY
Pacific Northwest district representative of Institute is panelist Monday

Convention of the National Plant Food Institute, announced by Dr. Russell Coleman, NPFI executive vice president:

Mr. & Mrs. Clyde T. Marshall, Commercial Solvents Corp., head the Hospitality Committee.

Chairman of the Ladies' Committee which will arrange the garden party scheduled for June 15, is Mrs. John Miller, Louisville, Ky. This committee also will be responsible for other events for ladies at the convention.

C. B. Clay, Cotton States Fertilizer Co., is chairman of the Memorial Committee. He will present the Memorial Resolution during the general session June 17.

Heading the golf committees are Gene Van Deren, Bluegrass Plant Foods, Inc., who will handle men's golf, and Mrs. W. B. Porterfield, Pelham, N. Y., who will be responsible for ladies' golf.

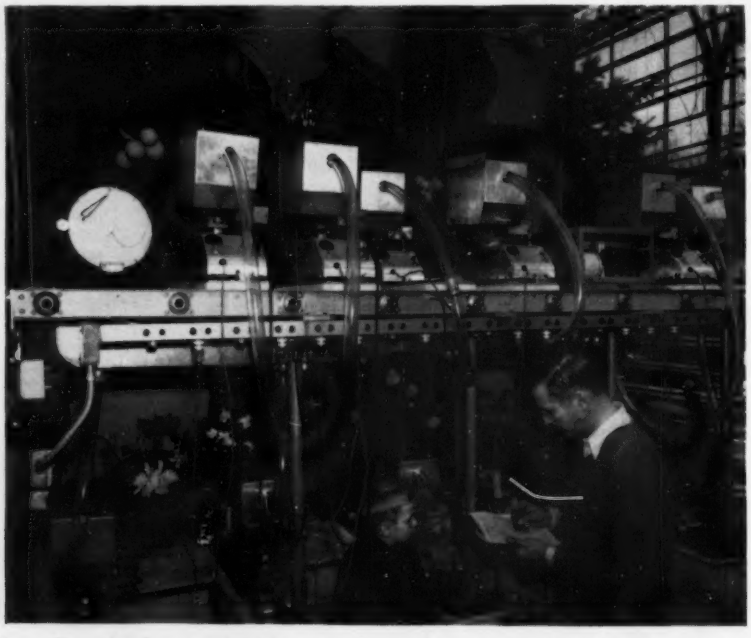
L. L. Jaquier, Phillips Petroleum Co., will chairman the Tennis Committee.

Chairman of the Horseshoe Pitching Committee is A. A. Schultz, Reading Bone Fertilizer Co.

Dr. M. F. Gribbins, E. I. Du Pont de Nemours & Co., will be in charge of the Skeet Shooting Committee.

The bridge and canasta party on June 16 will be under the direction of Mrs. Jack B. Snyder, Topeka, Kan.

Mrs. E. M. Kolb, Ridgewood, N. J., heads the committee in charge of obtaining prizes for the various events.



JOHN OTT, *time-lapse motion picture producer who will present a film on "Watching Fertilizer Work" at the Tuesday business session, is pictured here in his photographic laboratory with his son Henry.*

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You might call it a Multiwall "triple play." Jack White, Union Packaging Specialist, helped turn the trick for a Southern packer recently. Annual savings will total between $15,000 and $20,000.

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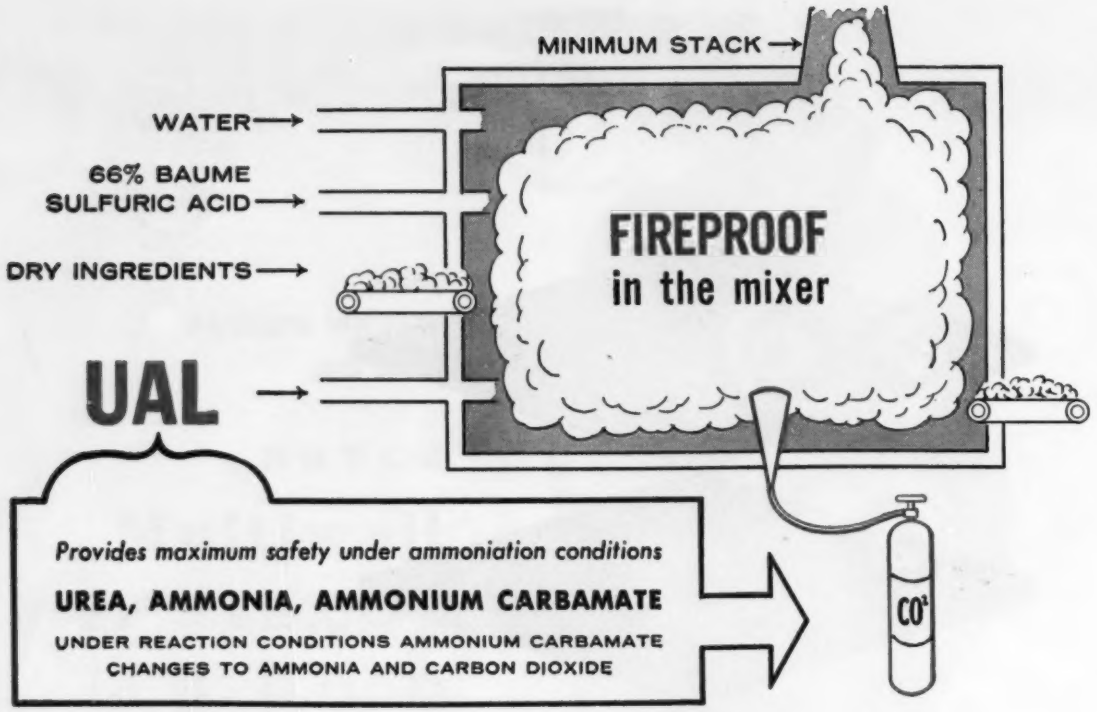

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Institute reveals plans for ACTION

The National Plant Food Institute has set up its new field force, and has outlined what that field force is to do. The several regional Plans for Action are elaborate, and we have here attempted only to give our readers a broad picture of what they contemplate in general. We are sure that a study of the report for your section would repay you well, and suggest that members of NPFI secure such copies from the nearest regional office.

As our readers know, National Plant Food Institute had made a survey of the attitude of farmers and their motivation. Mostly this showed an appalling ignorance of the many fine and wonderful research facts which are being constantly developed by the land grant colleges, USDA, and industrial researchers allied with the fertilizer industry. More than that it showed amazing ignorance of the economic value of fertilizer.

Taking the survey apart by geographical regions that coincide with NPFI's new regional set-up, they have developed a Plan for Action for each region. While these are fundamentally alike, they are tied closely to the known facts about each region, and more specifically to the fertilizer facts turned up by the survey.

These Plans for Action are the result of the initial study of the survey, and are presented by NPFI as a base for immediate action, but with full recognition that as they dig deeper into the whole picture, region by region, there will be additions and alterations to the plan. But basically it must follow the pattern which is digested here:

The survey confirms, first of all, the soundness of the work the Institute has been doing, plus channels for expansion of the program by districts which the new knowledge opens up. The farmer needs to be educated. We have all known this. Commercial Fertilizer Magazine has for a long time bemoaned the fact that so much valuable knowledge is wasting its sweetness on the desert air.

NPFI starts with the fact that farmers trust the state agricultural colleges as the principal source of practical information. Hence they have been working closely with these centers, and will now be able to work even closer, with the regional office set-up to make contact less a matter of geography.

Institute people are holding meetings with college leaders to work out the best way to channel the data down to the farmer in a way he will not only understand it, but will believe it. And they plan to cooperate in bringing the colleges and the industry together more frequently to discuss mutual problems. This, also, is an expansion of the fine cooperation NPFI has been giving the local-level groups, the Plant Food Educational Associations.

The survey showed the powerful part that can be played in farmer-education by the county agent. To strengthen the hand of this very useful citizen, they are working with USDA in the development of network radio programs to help glamorize the county agent and his place in the farmer's present and future.

There is a feeling that some of the reasons the farmer does not understand or know about many of the facts turned up by the $400,000,000 being spent annually on research by Federal and state agencies lies in a phrase that was the keynote of the war-time in-plant training programs. "If the student hasn't learned, the teacher hasn't taught" they used to say. Along this line the Institute plans to discuss with both college and industry information people the possibility that some of these programs may need more graphic, simpler presentation. And the Institute plans to cooperate in the development of visual aids and other methods which will help interest the farmer in the facts, and make them stick in his mind.

. . . too much knowledge fails to reach the farmer

Finances are a problem to most farmers, yet they do not seem to understand that fertilizer can make a better net profit, if properly used. For some time the Institute has been presenting college recommendations showing how an increase in fertilizer use will cut crop production costs by increasing the yield as against the overhead of production. This program will be expanded and cover areas which have not yet been studied from this angle.

Soil tests are high on the list of motivating factors in the study — along with personal experience. The conclusion is that farmers are like other people in that they must accept ideas as their own. While they get many ideas from outside sources, they like to think they were self-generated.

So NPFI is deeply concerned with the problem of dropping facts into the farm mind in such a way that they will turn into self-generated action on the part of the farmer. And, as personal observation and experience are the foundation of what the farmer believes in, farm demonstrations are to be pushed, under the direction of county agents or other qualified experts. And, wherever possible, these demonstrations would be managed by the farmers in the locality.

Soil testing would be emphasized in the same way, and for the same reason.

Bankers are the keynote to a lot of farm prosperity. Lack of money is a big factor in discouraging the use of enough fertilizer. So NPFI's Plan for Action calls for closer cooperation with the banker, on a broader scale than they have been doing in the past—1) to make credit available to farmers; 2) to urge bankers to see that farmers are using the most profitable rates of fertilization before extending loans.

The study showed a high incidence of farmers who do not confer with anybody about anything, according to their answers. Obviously none of the usual channels of information will reach these. Hence a program of supplying all possible authentic data to newspapers, farm magazines, radio and TV writers will be developed to the greatest possible extent.

The foregoing comments are digested, and freely interpreted from the various sectional Plans for Action as presented by NPFI. There

are a number of special features to these plans, which apply to specific areas only. For example, the Southeast—the heart of fertilizer history and experience. Here the row crop, which has been the traditional keystone of the economy, has begun to dwindle. The proportion of land devoted to row crops is diminishing rapidly, and many farmers are bewildered, because that is all they know how to do.

The Institute's Southeastern Plan for Action calls for education of these bewildered farmers, to give them once more a feeling of security. The area is deficient in feeds locally grown. Yet it is ideal feedcrop area, needing only proper land management to make feed crops a practical and profitable undertaking.

The same area is to turn the land to forest, growing pulp and saw wood to feed the paper and lumber industries, both of which are flowing into the Southeast at a rapid rate.

There are other alternatives, and these will be explored, and efforts made to show the farmer how he can convert to the new type crop, and teach him what he needs to know in order to be successful at what is really a completely new endeavor for him.

The Southwest, especially of recent years, has what NPFI calls the "weather barrier." All who have followed the major catastrophes which have struck the Southwest lately will readily understand farmer hesitation to spend money to improve land in that region.

In this area the direct relationship of fertilizer and the assurance of adequate moisture, through irrigation, builds fertilizer volume where it is understood. The Institute has been supporting efforts to promote such understanding, and has encouraged research on the subject. It is their belief that there is already enough scattered data which needs only to be organized, analyzed and correlated with weather data to show what fertilizer can do to override adverse weather.

There is a hint in the Southwest Plan for Action that a national study of this subject would be worth while.

The point of the weather barrier crops up again in the Midwest Plan for Action, where promotion of fertilizer's "weather help" will be emphasized.

In this Plan is an item which deserves expansion over the whole national scene. Farmers **talk** to dealers, but they **believe** the colleges and the county agents. Hence it is suggested that the dealers be provided with printed matter which has been approved by the appropriate local college, and is so labelled. The colleges welcome such cooperation, and the Institute has the contacts and the previous experience in presenting educational material so it is authoritative and understandable.

The various regional Plans for Action, of course enumerate the many forms of close cooperation already in force through NPFI's home office. This includes research grants, which have been reported month by month as the news has been released.

As an example of how widespread and how varied are the research grants of NPFI, here is a list of current releases, listed in order of release date:

North Carolina State, $2000 to help finance a state-wide series of tape-recorded broadcasts on subjects dealing with soil fertility, soil tests, fertilizer placement, liming, economics of fertilization and related material.

Oregon State, $1000 to help support field experiments in the coastal area of Oregon to determine the need for lime and fertilizer in producing forage crops.

Texas AES, $1000 to expand a fertilizer research program in the Texas High Plains, as a basis for promoting demonstrations and improving soil test recommendations in the area.

U. of Washington, College of Forestry, to develop specific information on response of Douglas Fir to fertilizer applications under field conditions.

Midwest office of NPFI will shortly distribute wall charts for Illinois and Wisconsin to member companies. These will have accompanying check lists, with specific information relating to the major soils in each state. This material is a cooperative effort with the Universities of Illinois and Wisconsin. Midwest also has in action the following 6 projects:

Indiana: Here the Institute is supporting in part a cooperative project between the Agronomy Department and the Agricultural Economics Department. The objective is to measure response to fertilizer applications and to evaluate this response in economic terms.

Kentucky: Research is underway on the response of crops to increments of fertilizer: attempting to obtain the upper limits of yield per acre and relating these to economic factors.

Michigan: Arrangements have been made with the Soils Department and the Economics Department to support research work measuring crop response to fertilizer and evaluating the response in economic terms.

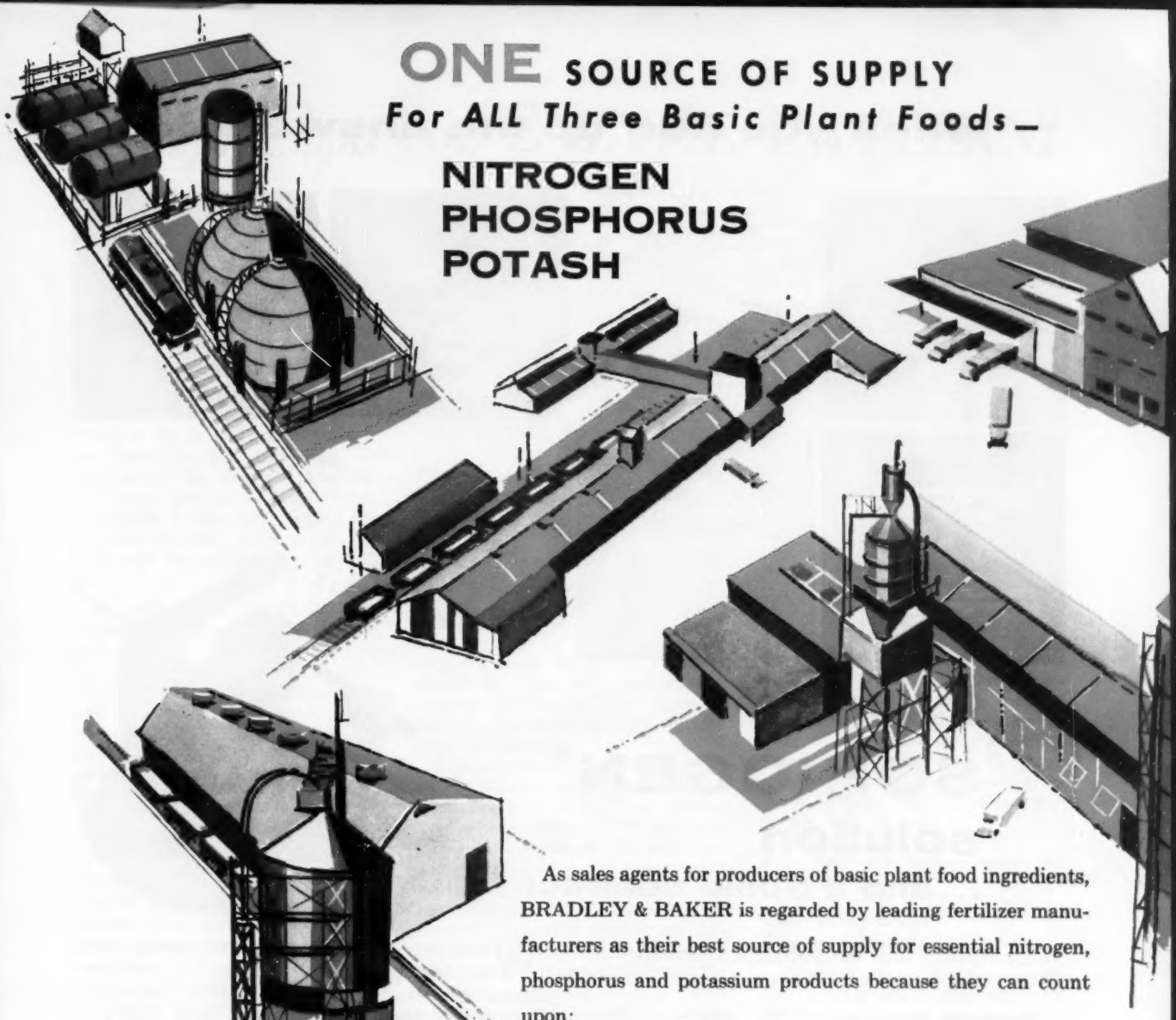
Minnesota: The Institute is supporting demonstration work on pasture fertilization under the direction of C. A. Simpkins, Extension soils specialist, and Ermond R. Hartmanns, agricultural economist.

Missouri: Financial grants by the Institute have been given for demonstration projects where needed and for fertilizer research work in general.

Wisconsin: Institute financial support is given to the demonstration program conducted by Professor C. J. Chapman on corn, pasture and small grains.

Industry Calendar

Date	Organization	Place	City
June 9-11	Sou. Fert. Control	Heart of Atl. Motel	Atlanta, Ga.
June 15-18	Nat'l Plant Food Inst.	The Greenbrier	White Sulphur
June 28	Del-Mar-Va. Fert. Assn.	----------	Ocean City, Md.
July 8-10	Pac. N.W. Fert. Conf.	Bannock Hotel	Pocatello, Idaho
July 13-15	Plant Food Inst. of N.C. and Va.	Cavalier Hotel	Va. Beach, Va.
July 18-19	S.W. Fert. Conf.	Buccaneer Hotel	Galveston, Tex.
Aug. 20-24	Canadian Fert. Assn.	Manoir Richelieu	Murray Bay
Oct. 22-24	Pacific N.W. Fert. Assn.	----------	Gearhart, Ore.
Oct. 29-31	Fert. Round Table	Sheraton Park Hotel	Wash., D. C.
Nov. 9-11	Calif. Fert. Assn.	Ambassador Hotel	Los Angeles, Cal.



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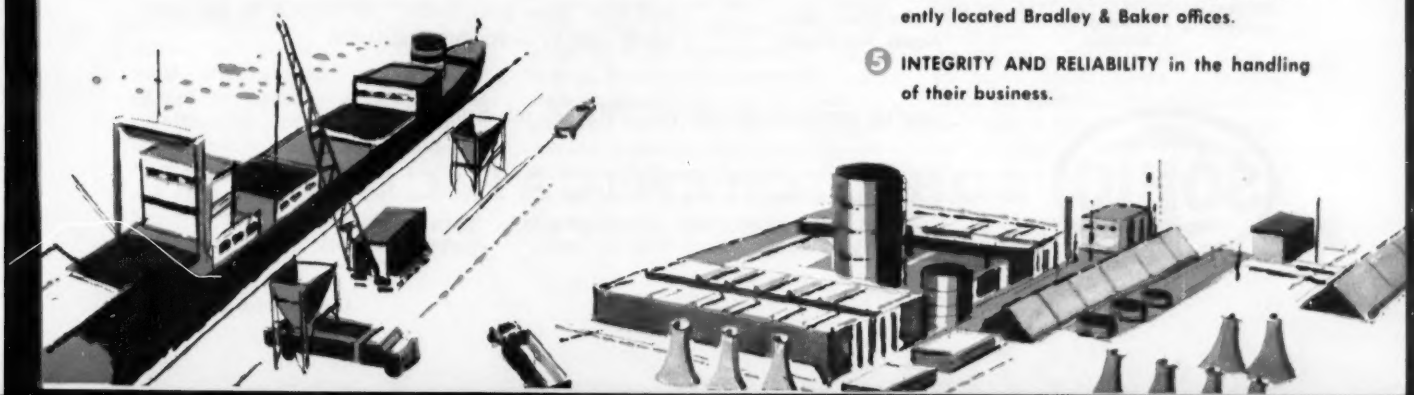

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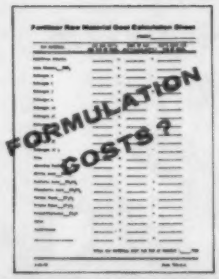
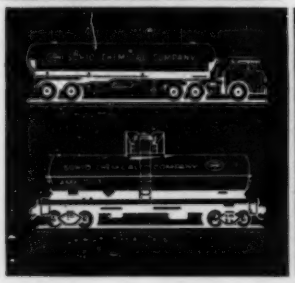


SALTING OUT TEMPERATURES?

FIXED TO FREE RATIOS?



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Hunger Signs - or ENZYME PATTERN?

by Dr. Vincent Sauchelli

Chemical Technologist
National Plant Food Institute

Plants and animals may be inferior in quality long before hunger signs of deficiencies or excesses are evident. That comment was made by Dr. William D. McElroy, Director of the McCollum-Pratt Institute of the Johns Hopkins University, Baltimore, Maryland, in a lecture before the National Academy of Sciences this past January. Other statements interesting to us in the fertilizer industry were made and these will be noticed in what follows.

Dr. McElroy and his staff at McCollum-Pratt are dedicated to the investigation of trace elements in biology and agriculture. Some novel findings about the function of trace elements in these branches of science were described in the lecture. Since these elements play such an important, but as yet not fully understood, role in the lives of all created things, we may expect new and acceptable developments from research projects at this Institute.

Foods and nutrients are needed for growth by the cells of every organism. Their function is to generate and release energy, build and repair cell tissues and regulate the machinery of metabolism. Because trace elements are needed in small amounts, scientists believe they function primarily as catalysts and most often they do this as a part of an enzyme system. They act therefore somewhat like vitamins which are organic micronutrients whereas the trace elements we talk about are inorganic. Deficiencies and excesses of nutrient elements are a matter of degree.

In his talk Dr. McElroy emphasized that the visual symptom of a deficiency, popularly called a "hunger sign," may show up long after the plant may actually have suffered a deficiency and become inferior in quality. Furthermore, yield and growth measurements cannot be considered adequate as manifestations of a normal, healthy organism. The real, significant test for such a status has to be found in the enzyme patterns. There is the heart of the true test. If the diagnosis of plant and animal diseases—

Dr. Sauchelli

deficiencies—is to be of value it should be made early and on the enzyme systems of the organism. Studies of growth and yield will not give the answer.

Biochemists are now concerned more with explaining how trace elements behave in enzyme systems than with whether this or that trace element is essential in nutrition. This derives from evidence that growth or yield measurements are not adequate criteria by which to determine whether the various systems of metabolism are properly functioning for normal health. Dr. McElroy posed the question: Can we apply trace elements and other fertilizer nutrients to the soil and in the diets of animals to the point where we get a maximum crop yield or growth rate and be satisfied that we are giving that organism the highest nutritional benefit? Several excellent examples cited indicated that the answer is NO. And the examples cannot be considered extreme and special cases. Visual "hunger signs" of nutritional deficiency or excess in plant and animal don't have to be present to prove actual deficiencies in the health and vigor of the organism. The speaker said that what seems clear from their studies is that for each level of trace-element supply during growth a characteristic enzymatic pattern appears without regard to the yield. The enzymatic pattern is the real test. Enzyme patterns keep changing under each level of trace element nutrition and such changes, when understood, are most valuable to the diagnostician. Growth studies cannot possibly give such information.

The lecture as a whole was by necessity highly technical and scientific considering the place and audience. Perhaps, to illustrate the above phase which was noted above, the following brief report from the North Carolina Experiment Station may be pertinent*. It shows that trace elements can affect the plant's use of oxygen. It is known that plants use oxygen constantly to burn up sugars and fats for energy. Recent tests with tomatoes reveal the influence of trace elements—iron and copper—on enzyme activity. Iron deficiency reduced by half the enzyme activity in the roots; copper deficiency reduced enzyme activity in the roots by 75% and in the leaves by about 88%. When both elements were deficient the enzyme activity was still further reduced. These studies are adding new knowledge of how mineral elements affect the use of oxygen by plants and constitute a new basis for the more efficient use of fertilizer materials.

*N.C. Research & Farming. Winter 1958, Page 8.

Harvester Sales Suggest Pickup

Reported farm equipment sales by International Harvester, 5% above the same 6-month period last year included "the largest sales for April since 1955." These were domestic sales. In the last week in April, I-H reports, their dealers delivered the largest number of tractors they had sold in any one week for the past 6½ years. And May business was starting out well when this report was made.

Japan Growing Space Food

Japan, faced with the problem of feeding its rapidly growing population in the future, which is expected to reach 100,000,000 by 1970, has opened up a chlorela farm. This is an algae which grows in shallow pools on sunlight and carbon dioxide, and is rich in protein, weight for weight, as meat or soybeans. Maturing in 5 days, it is dried and powdered. The result is a compact source of nutrition which may well be the space food of the future.

Forests & Fertilizers

The Role of Fertilizers in Forest Management

by T. Ewald Maki
Professor, Forest Management
N. C. State College School of Forestry

Modern forest practices are being rapidly intensified, and to a degree scarcely dreamed of ten or fifteen years ago. High cost of land, increased value of forest products, and the pressures of an expanding industry dependent directly on the forest resource are some of the factors that are accounting for the intensified efforts to attain the goal of having every acre of commercial forest land producing wood fibre at its maximum capacity. Taxes, road maintenance, protection, and other annual costs must be met even if the land is non-stocked or only partly stocked with marketable tree species, so it is usually good business to restock such land to full production as quickly as possible.

No single practice is likely to provide a clever short-cut to this goal of full production on every acre of commercial forest land. Many silvicultural and land management practices need to be employed, as may be dictated by specific local conditions and circumstances. To the list of these practices (including more complete protection, site preparation, planting, weeding-out or poisoning undersirable competing vegetation, thinning over-stocked stands, selecting and improving strains of trees by application of genetics, etc.,) we may add use of fertilizers as another tool available to the forest manager.

It seems relevant to examine possible developments in the use of fertilizers in modern forest management and to speculate to what extent these developments may affect chemical markets, particularly for nitrogen, in the future.

The most promising area for fertilizer use in forest management would appear to be the 15-state Southern forest region extending from West Virginia and Virginia southward and westward to Oklahoma and Texas. This region has 229 million acres of forest land comprising 47 percent of the Nation's timbered area; nearly two-thirds of the Nation's domestic pulpwood production is already centered here. The long growing seasons and abundant rainfall provide two factors that seem essential to the most favorable response of trees to fertilizer applications.

One use of fertilizers, already established as a market, is in forest nurseries. Nursery production is expanding rapidly, and is expected to reach 1½ billion seedlings in the near future. This amount would require, however, only about 2,000 acres of nursery bed space, so the main fertilizer requirement, namely nitrogen, would probably not exceed one thousand tons of ammonium nitrate, or equivalent salts, annually.

Another use of fertilizers, rapidly developing in the Southern pine region, is for tree seed orchards and seed production areas. Assuming a need for about 150,000 seed trees of pine species, and an annual nitrogen fertilizer requirement of 30 pounds per tree, the total amount needed for this purpose would be only about 22 hundred tons. Even if fertilizer use were extended to seed trees in naturally re-seeding areas, the total annual requirement would appear not to exceed about 5 thousand tons for the 105 million acre Southern pine region.

Christmas tree plantations are being developed in many parts of the country and offer a relatively attractive opportunity for fertilizer use because of the short period required to produce a crop. Annual production of Christmas trees now exceeds 40 million trees; if eventually half of these would use up to a pound of fertilizer, such as ammonium nitrate, as plantation-grown products, Yule-tree culture on this basis would create an annual market of about 10 thousand tons annually for nitrogen.

A very substantial acreage in the South is being subjected to site preparation measures on a very intensive basis, mainly to make planting easier or natural seeding surer, and also to reduce competition from worthless vegetation such as scrub oaks. In some situations the land is so thoroughly prepared that it permits growing a farm crop, such as watermelons, as an interim crop before the land is planted to pine. Fertilizing the farm crop may leave some residual effect that benefit the pine crop that follows. However, direct application of fertilizer to pine seedlings at planting time is not now considered feasible because such application stimulates weed and grass growth which may smother the slower-growing pine seedlings. It is believed that post-planting applications, somewhere between the 2nd and 5th year in the Southern pine region, would be worthwhile on at least 20 percent of the annually planted acreage, if practical methods of application could be worked out. This would provide a market for about 75 thousand tons of mixed fertilizer in the Southern pine region, but because of practical limitations centered mainly around application techniques, it seems unlikely that this market will ever develop to any significant degree.

The shifting pattern of land use, still fairly common throughout this region, finds a significant portion of impoverished farm land reverting to forest growth, but frequently so exhausted in fertility and poor in physical condition that it won't support a marketable crop of trees unless drastic steps are taken to ameliorate the soil. At present, possibly as much as a million and a half acres are in this condition in the South.

This abstract was presented by Mr. Maki, who also serves as forest consultant for Allied Chemical's Nitrogen Division, at the April meeting of American Chemical Society in San Francisco.

New York Opens Hall of Forests

As part of the New York Museum of Natural History, the Hall of North American Forests, ten years in preparation, was opened May 13 to the press and then to the public the next day. It dramatically tells the story of trees in their relation to man, presents the forest as a biotic community, and is the most comprehensive exhibit of its kind in the world.

Restoring this land to productive forest growth would require, among other things, several hundred tons of fertilizer, but this requirement would not be annual, it being in the nature of a "one-shot" deal.

The largest new outlet for products of the fertilizer industry would be in the fertilizing of established stands for the purpose of increasing volume or quality of wood growth, or reducing the time required to grow a timber crop to a specified size or condition. So far the economic feasibility of this practice has not been proven. In the South, probably the oldest study of this problem was undertaken cooperatively by the School of Forestry of N. C. State College and the Nitrogen Division of Allied Chemical Corp. in Durham County, North Carolina. This study, now in its eighth year, has shown measurable response of loblolly pine plantations to nitrogen applications at rates of 80 to 160 lb. N per acre, but the best treatments show only an increase of 40 percent in wood volume over control or check trees. Although this growth response is gratifying, it is not yet deemed enough to defray the costs of materials and application of the fertilizers. There is still some hope that longtime benefits of such treatments may provide a "break-through" of the present economic barriers.

NPFI Aids Washington's Douglas Fir Study

A recent grant of $2000 by the National Plant Food Institute to the University of Washington will be of considerable benefit to implement their present program of tree fertilization, according to Dr. Stan Gessel of the College of Forestry. The money will be used to develop specific information on the response of Douglas fir trees to fertilizer applications under field conditions.

The idea of fertilizing trees to produce more wood per acre in a shorter period of time coincides very well with the modern day forestry management practices. Preliminary studies by Dr. Gessel and other members of the University staff have shown that fertilizers have a definite place in forest-land management. Nitrogen applications to Douglas fir trees have given an increase in height growth from two to three times in all height classes, with the largest trees showing the greatest responses. In several instances Dr. Gessel and his associates have shown that fertilization will accentuate natural competition on low-site areas and help the thinning process in overstocked stands.

Fertilizers may help to decrease the rotation age of a forest crop from 70 to 50 years, or grow the same volume per acre in 50 years rather than 70. This would mean less cost in land and all the investments associated with owning and operating large acreages of forest land.

Dr. Gessel's preliminary experiments have indicated that there is a tremendous potential for fertilizers in the forest industry of the Douglas fir region. The exploratory work has been very favorable, but much more research is needed to provide the basic information needed by the commercial companies and small woodlot owners before a full-scale fertilization program can be carried out.

Dr. S. P. Gessel, Associate professor of Forestry, University of Washington, discusses tree fertilization with Todd Tremblay, NPFI Northwest representative. The tree on left has received a good fertilizer program compared to no fertilizer on the right.

Black Collars Stop Weeds

Squares of black polyethylene film, cut to be slipped around the stalk of a plant like a collar, retard weeds around the roots, and cut the need for cultivation. "Y-Weeds" they are called by the Crystal X Corp., Lenni Mill, Pa., who make 'em.

Pines Called 'Oil Wells'

"The pine tree may be regarded as an upside-down oil well," one of the nation's top research chemists says.

Dr. Frank J. Soday, vice president of the Chemstrand Corp., told the Southern Research Institute's mid-May conference at Birmingham on the economic future of the South:

"The great stands of pine dotting the Southern landscape are the mainstay of much of Southern industry today, and the guarantee of its future industry when the last oil well runs dry."

Predicting that the world's oil fuel resources will be exhausted in the next 50 to 100 years, he said the petro-chemical industry now rapidly moving into the South will then be able to "turn to the pine tree, the South's most important renewable resource, for the basic raw materials" it requires for production.

Dr. Soday pointed out that the average tree converted to lumber by present processes yields only about 65 per cent useful products.

The residues, he declared, "can be readily converted by known processes to a liquid which can be used in the place of gasoline in internal combustion engines, or readily converted into any one of the 5,000 different products now obtained from oil and gas."

He added that a ton of wood residues "can be processed to yield 110 gallons of liquid fuel."

USDA Studies Metal Chelates

USDA scientists are working with state researchers to find out how best to make use of chemically chelated metals. As our readers know, iron and zinc deficiencies have yielded well to chelates.

Lime Conserves Potash

North Carolina AES points out that lime helps conserve potash that is now being lost in drainage water, because it helps the soil absorb more of the potash which, therefore, is not so readily leached away.

Farm ownership is at an all time high, according to USDA, with only one out of three farms carrying a mortgage.

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Nitrogen Division Study Shows How To Reach Farms

In February we ran a digest of a study made for Allied Chemical's Nitrogen Division in Michigan, Indiana, Illinois and Ohio. This so clearly showed the need for better education of the farmer concerning fertilizer that we said, editorially, "The industry is not doing a good selling job. There is very little faith in manufacturers generally. There is very little faith in dealers generally . . . " and so on until we concluded . . . "No wonder we have fertilizer running out of our ears."

Meanwhile, Nitrogen Division has made a supplementary study that fits right into what we have been saying about the need for better promotion of fertilizer. This, known as Part 2, has not yet been published, but we had a peek at it, and this is our interpretation of what it means. The study was made in the same states, in 15 counties having sales of 100 tons or more of a selected brand of mixed fertilizer. It was conducted in the Spring of last year.

Farm papers rank far yonder above all other media that reach farmers in terms of helpful farm information, in information helping solve day-to-day problems. 36% spend over two hours with the magazine that stands out as best, in this area, over several different questions. And that goes for the wife as well as the farmer himself.

Most of them, of course, read daily papers—86%.

Most have only one radio in the home but 31% have two. 23% have radios in the barn. 97% have no radios on their tractors, although 40% had two tractors. But 73% have a car, and 59% have radios in their cars. Interestingly, 11% have radios in their trucks.

That gives you an idea of channels through which the farmer can be reached on a mass basis.

They have no particular day of the week to listen to radio, but 54% of them listen between 6 to 7 a.m. and 35% more listen at noon. As these are the farm program hours, the inference there is clear, it seems to us. Yet only 16.7% list farm news as their favorite programs, with world and local news coming right behind with 15.7%. In TV, Lawrence Welk and $64,000 Question lead all the rest, but only a few points ahead of news and farm reports. Welk and $64,000 each got 5.6% rating! Perry Como got 4.1% and I Love Lucy had 3.8%. Sports in general added up to 11.4%. Only 11.9% had no TV. 48.9% spend more time watching TV on Sunday than any other day.

Asked about a specific brand of fertilizer, 87% were familiar with the brand name, 55% saw it at the dealers, with good representation for a number of farm papers which ranged from 16.5% to 22.8% in the recognition score. 52.3% said the brand made them think of an outstanding product, 51.5% thought it an expensive product, 37.6% would be willing to pay $5 a ton higher for this brand . . . because, said 46.3%, they were skeptical of cheap fertilizer.

These farm families showed a high incidence of membership in FFA and 4-H clubs.

These families reported that the last time they bought fertilizer and talked over their needs with someone: 15.2% said agriculture officials, 29.3% said dealers or salesmen, 8.6% said neighbors, and only 14.7% talked it over with the wife, son or other family member.

Wise Words From Tilghman's "Tiller"

"A person in the fertilizer business is dependent on repeat business. To succeed he must give quality and service that will bring business back another year. He must be reliable. Competition has made fertilizer one of the best buys that a farmer can make. The successful man in the fertilizer business is perhaps one of the most reliable men in your neighborhood. He has to be that way if he wants to stay in business."

Volume Off But Not Research

Although volume is off 30% in the chemical industry, there has been no shrinking in the $500,000,000 this industry spends annually for research.

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McVickar calls for

New Approach to Plant Food Programs

Plant food programs designed to "save" money for "growers-in-general" are obsolete. They must be planned to "make" money for the "individual" grower, according to Dr. Malcolm H. McVickar, chief agronomist for California Spray-Chemical Corporation, who spoke at the recent conference of nitrogen products manufacturers in St. Paul.

Dr. McVickar based his challenge to revise current practices in plant food selling and programming on changing conditions in the business of farming and on advances that have been made within the plant food industry itself.

"The evolution of larger farming units and the increase in farming costs are making it imperative for the grower to put production on a specialized, assembly-line basis . . . to tailor every operation and every cultural practice for maximum efficiency and maximum return per investment dollar.

"Fortunately, research in agronomy and developments in the plant food industry have put us in the position to supply the farmer with the specialized program he needs. We have many products, each containing distinctive agronomic properties, with which to tailor a maximum-return program. We have gained much knowledge about the secrets of timing and placement to get maximum returns from each of these products.

"And we have at hand the necessary 'increment of usage' data to help him decide whether the use of more or less fertilizer will give him the better return per dollar invested.

"Today, the best-return-per-dollar must take into account many factors—soil compositions, type of crop grown, expected profit from that particular crop, labor costs, and even such a seemingly remote factor as income taxes.

"For example, the 'general recommendation' as we know it today, say for 100 pounds nitrogen, 60 pounds phosphate and 60 pounds potash for corn on a soil not too well supplied with these nutrients, might be a good recommendation for one operator and worthless for another.

"One farmer may be in a 22% income tax bracket; another in the 53% and another in the 72%. Fertilizer is a tax deductible expense. The farmer in the high income tax bracket, on the face of it, would appear to benefit less from using more fertilizer than the man in the lower income tax bracket. But assume, for example, that the high bracket man is fertilizing corn for the feeding of purebred Berkshire hogs for breeding stock. If he sells them after six months of age, profits are figured on a capital gains basis. Another farmer, in the same tax bracket selling meat hogs, would not be entitled to the capital gains tax treatment.

"There are many differential points. One farmer may be paying $1.50 per hour for labor, another $2.25. Labor costs, or any production cost influences the amount of fertilizer a particular operator should use for maximum profit.

"In place of 'general' recommendations, the farmer should be supplied with tables to show him what to expect with increasing increments of fertilizer. Then he could figure out for himself the correct amount of fertilizer to use on the particular crop, and this amount could actually vary from year to year on the same crop on the same farm.

"The farmer today has a choice among many types of plant food products. In sulfur deficient areas, ammonium sulfate is far superior to ammonium nitrate per pound of nitrogen. Where there is no sulfur deficiency, ammonium nitrate applied to a quick growing crop when the soil is cold will chalk up a better record than will ammonium sulfate.

"There are products that greatly improve water penetration on high pH soils. Under certain conditions a pound of nitrogen from this source will be worth more than two pounds from other sources."

In conclusion, Dr. McVickar pointed out that it is to the best interest of all concerned—plant food salesmen, researcher, and agency advisor—to help the grower become fully aware of all factors involved.

"If the grower is not aware of the effect of all these factors on his profit picture, the automatic trend in large farming units will be toward large purchases of fertilizer on the basis of bids . . . which will mean the directing of monies away from progressive research toward mass production of such materials as can be produced most inexpensively. If this happens, both farm and industry will be the losers."

Dressed as a Swami, Dr. Malcolm H. McVickar, chief agronomist for California Spray-Chemical Corporation, in a speech before nitrogen products manufacturers, uses crystal ball to dramatize trends demanding changes in fertilizer selling methods and educational material.

How to Get Free Fertilizer

Out in Oregon, a swindler called a fertilizer concern, said he was with another fertilizer concern, ordered $700 worth and said he was sending over a truck. He did. And that's the last the Oregon-Washington Fertilizer Co. has heard about him or the fertilizer.

More Golf Courses Than Ever

As of April 1 there were 5686 golf courses in operation and those in preparation and in the planning stage are greater than ever. The 5686 figure is a new post-war high. Think of all the fertilizer those greens need!

Consistency wins in the bag business, too!

No horseshoe player can pile up points merely by swinging his arms. It's *pitching ringers consistently* that makes him an expert.

In the bag business, too, good delivery and smooth follow through—without lost motion—are sure proof of experience and know-how.

Dealing with Chase can be like hanging a horseshoe over the door, for it brings both good bags and good will that naturally follow when so many do *so much* to create them.

Our 111th Year

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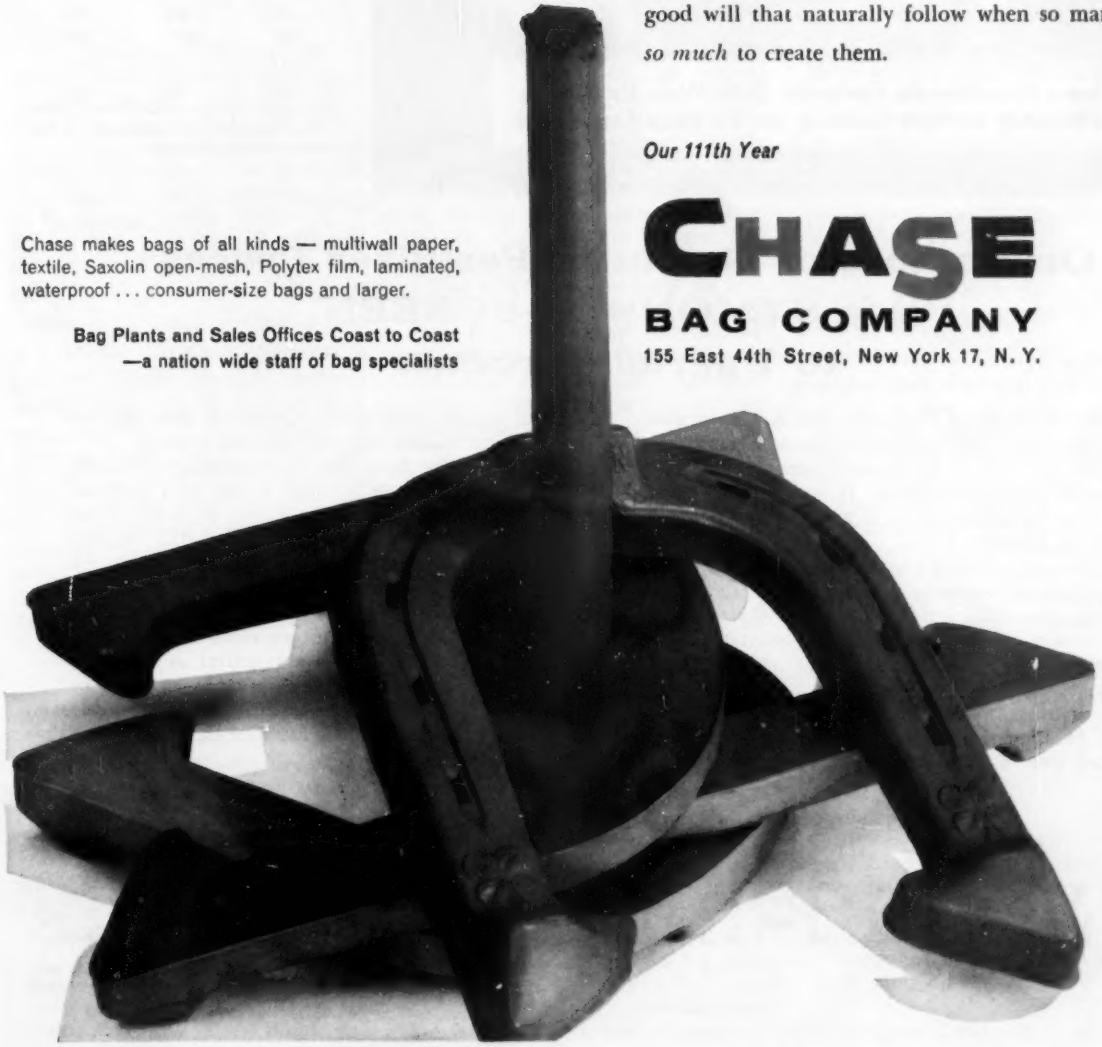
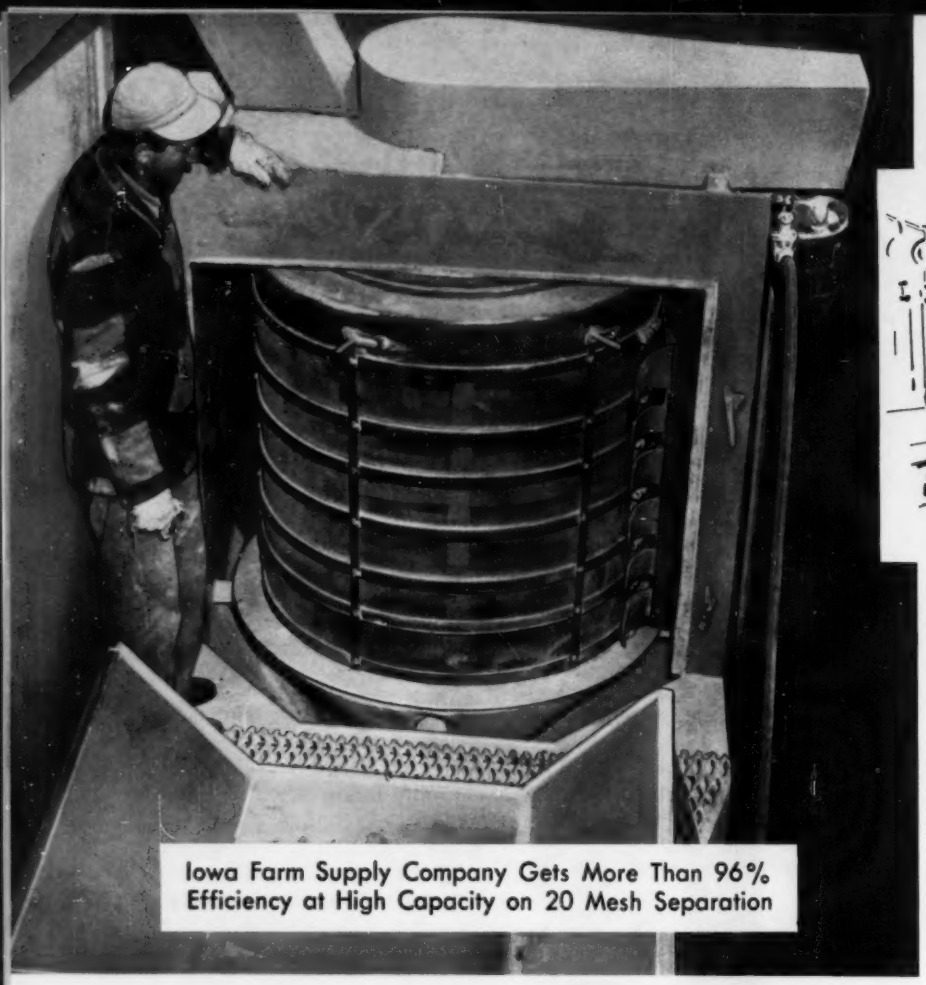
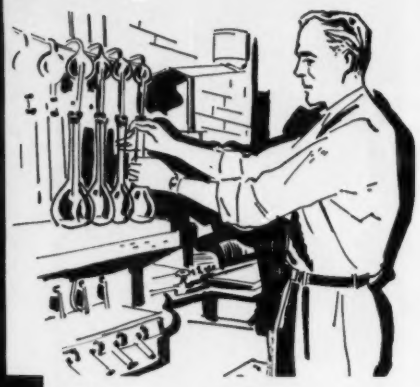
Bag Plants and Sales Offices Coast to Coast —a nation wide staff of bag specialists





Iowa Farm Supply Company Gets More Than 96% Efficiency at High Capacity on 20 Mesh Separation

Left: Symons V-Screen utilizes centrifugal force to remove fines from the various grades of granular fertilizer at Iowa Farm Supply Co. plant. Note clearness of screen mesh.



An average sieve analysis of the product of the V-Screen, frequently made by IFS laboratory personnel to assure a consistently sized product at all times, is as follows:

Retained on Mesh	Per Cent by Weight	Cumulative % by Wgt.
5	0.3	0.3
16	89.7	90.0
20	6.0	96.0
−20	4.0	100.0

This indicates an efficiency of the screen of 96 per cent.

Originators of Granular Fertilizer Process use SYMONS® V-SCREEN to Upgrade Product

The Iowa Plant Food Company, which was formed at Des Moines by the Iowa Farm Bureau Federation, started a new era in the manufacture of inorganic fertilizer in the United States. It was the first plant of its type to manufacture a high analysis mixed fertilizer in granular form.

The granular product produced by the Iowa Farm Supply Company consists of combining a mixture of relatively dry solids for agglomeration through the addition of a liquid during suitable agitation. This mixture is then formed into spherical shaped granules by rolling in a revolving drum.

The dried granules range in size from approximately ⅜" diameter to small grains. These granules are sized over a vibrating screen equipped with a 5 mesh square mesh cloth. Oversized granules are crushed and resized over the scalping screen.

The undersize from the conventional vibrating screen, minus 5 mesh to dust, is fed to a Symons V-Screen for final sizing on about 20 mesh, thus giving a final product of −0.156" to +.032" in size. The −20 mesh is returned to the ammoniator. At present, material is fed to the 36 sq. ft. of screening surface at the rate of about 55 tph.

This serves as an excellent example of the ability of Symons V-Screens to size material in the finer sizes at high capacity, ranging from 4 mesh down to as small as 80 mesh in some cases. *Write for complete information.* NORDBERG MFG. CO., Milwaukee 1, Wisconsin.

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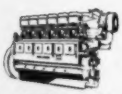
GRINDING MILLS

MINE HOISTS



DIESEL and GAS ENGINES

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Left: Planning Committee—Mitt Morehead, Olin Mathieson Chemical Corp., Little Rock; Mrs. Hackett; Stanley Hackett, Dixie Fertilizer Company, Shreveport; Mrs. N. D. Morgan, Dr. R. L. Beacher, NPFI; Mrs. Tom Wright; Dr. Russell Coleman, NPFI; Mrs. Mitt Morehead; Tom Wright, Texas Farm Products Co., Nacogdoches, Texas; Mrs. Harold Trammell; Harold Trammell, Farmers Fertilizer Co., Texarkana, Texas; Jimmy Powledge, National Hotels; Dr. N. D. Morgan, American Potash Institute. **Right:** The Buccaneer Hotel, Galveston.

Southwest Conference Set For July 18-19

The Planning Committee of the Southwestern Fertilizer Conference & Grade Hearing met in Shreveport May 9 to plan a lively and entertaining program for those who will attend the Southwestern Fertilizer Conference at the Buccaneer Hotel in Galveston, Texas, July 16-19. Registration will begin at 1:00 p.m. July 16 with a reception at 6:30 p.m.

Stanley Hackett, president of Dixie Fertilizer Company, Shreveport, La. will preside over the morning session July 17. Dr. Russell Coleman, executive vice-president of National Plant Food Institute and Dr. R. L. Beacher, director of NPFI's Southwestern regional office, will present the Institute's program for the Southwest. They will bring recent findings of the survey made of dealers and farmers in the Southwest and will suggest an aggressive plan of action to increase the use of plant food. An address will be given by Clayton Rand, Gulfport, Mississippi who is a distinguished editor, author, speaker and syndicated columnist. Mr. Rand was recently acclaimed as being one of the ten top convention speakers in the United States by the U.S. Chamber of Commerce.

The golf tournament will be held during the afternoon of July 17 with Bob Linderman, International Minerals & Chemicals, serving as chairman. The evening festivities will be concluded with a banquet and a dance.

Dr. J. F. Fudge, Texas State Chemist, will conduct the Annual Grade Hearing Friday morning, July 18. Control officials from Arkansas, Louisiana, New Mexico, Oklahoma and Texas will participate. An industrial tour of Galveston is arranged during the afternoon. Saturday, July 19, will be set up for those wishing to go deep sea fishing, boating and golfing.

The Southwest meeting is known as a family meeting and it is urged that all members bring their wives and children. Reservations should be made promptly with the Buccaneer Hotel in Galveston.

Penn. PFES Talks Changes

Farm, business and educational leaders took a candid look at some of the current changes in agriculture at the summer meeting of the Pennsylvania Plant Food Educational Society in Butler, Penn.

Francis A. Raymaley, American Cyanamid Co., keynoted the program and termed the demonstration work they are doing as "astounding." More than 100 persons attended the two-day meeting.

Program

Southwest Fertilizer Conference & Grade Meeting
Buccaneer Hotel, Galveston, Texas July 16-19

Wednesday, July 16

1:00 p.m. Registration (Fee: Men $15 - Ladies $10)
6:30 p.m. Reception, Honoring Technical and Control Groups.

Thursday, July 17

8:00 a.m. Registration
9:30 a.m. General Session—Stanley Hackett, presiding:
National Plant Food Program for Southwest—Dr. Russell W. Coleman and Dr. R. L. Beacher
Introduction of speaker by Jack Lindsey
Address: Clayton Rand
12:30 p.m. Ladies' Social and Luncheon
2:00 p.m. Reception Room for Ladies
1:30 p.m. Golf Tournament—Country Club, Bob Linderman, Chairman
7:00 p.m. Social Hour
8:00 p.m. Dinner and Dance

Friday, July 18

(No registration for this meeting)
9:30 a.m. Annual Fertilizer Grade Hearing — Control Officials of Arkansas, Louisiana, New Mexico, Oklahoma, and Texas cooperating
2:30 p.m. Industrial tour of Galveston

Saturday, July 19

Sporting Activities—Deep Sea Fishing, Bay Fishing, Pier Fishing—Dr. N. D. Morgan, Chairman
Boat Excursion
Golf

California Fertilizer Conference

drew 200 to Cal-Poly Campus

200 persons interested in soil fertility and plant nutrition recently heard Dr. Albert M. Boyce, director of the University of California Experiment Station, Riverside, report on the trust and confidence which the University and other research institutions repose in the fertilizer industry.

Dr. Boyce was the featured speaker at the banquet held in connection with the Sixth Annual Fertilizer Conference which convened on the campus of the California State Polytechnic College in San Luis Obispo, April 14.

Sponsored by the Soil Improvement Committee of the California Fertilizer Association with Earl Mog of Stockton as conference chairman, the program this year emphasized range fertilization studies and reports on sulfur response in California. Evidence of the increasing interest in these subjects was exemplified by the large attendance composed of farmers and ranchers, laboratory technicians, agricultural fieldmen, official workers of the University of California, California State Polytechnic College, and the USDA in addition to those from the industry itself. These people had gathered from all parts of California, the Pacific Northwest, Washington, D. C. plus other Eastern and Mid-western areas.

Dr. Boyce in his banquet address spoke on the subject of "Cooperative Relations in Agricultural Research Between Industry and the University of California." In his presentation he reviewed the history and development of quality fertilizer and pesticide materials and of the accompanying development of mutual confidence on the part of the official research people and those who make up these two industries. He stated that with the discovery of so many new materials that require extensive screening before they can be safely used, the agricultural chemical industry not only provides the University with grants-in-aid to do this work but often send their technical men to work hand in hand with university research people in order to make this job as expeditious as possible. Dr. Boyce stated that today, because of this cooperative relationship, there are few areas of dispute and when they do arise, the interested people get together and resolve them as quickly as possible. This makes for better service to agriculture and has contributed to the feeling of confidence which California agriculture now reposes in these industries which provide it with such vitally important crop production tools.

William G. Hewitt of Berkeley, president of the California Fertilizer Association, formally opened the conference and expressed his appreciation for the wonderful assistance that had been given the sponsoring committee by President Julian A. McPhee and his staff at the Cal-Poly campus.

President McPhee welcomed the delegates to the campus and expressed his pleasure in discovering so many old acquaintances in the group. He briefly outlined the history of the College which held its first classes in 1901. The San Luis Obispo facility currently has 4500 engineering students and 1100 agricultural students, in addition to 400 young women. Co-education will be inaugurated with the 1958 fall semester at the Kellogg-Voorhis campus at Pomona. He reported that more than 400 employers had solicited graduates at the San Luis Obispo campus alone during the past year, which indicates the need for the practical training received there.

Formal papers were presented by the following speakers: Dr. Daniel G. Aldrich, Jr., chairman, Department of Soils and Plant Nutrition, University of California, Davis and Berkeley on "Soil Compaction and Soil Conditioning"; "Results to Date of Range Fertilization Demonstrations," by Dr. Logan Carter, head, Department of Soils, California State Polytechnic College, San Luis Obispo; Dr. Clarence M. Johnson, associate chemist, Department of Soils and Plant Nutrition, University of California, Berkeley on "Rapid Determination of Sulfur in Plant Materials and Diagnostic Technique"; Dr. Roy Branson, extension soils specialist, University of California, Riverside, on "Soil Salinity and Fertilization"; and "Fertilizer or Pesticide (or What)" by Robert Z. Rollins, chief, Bureau of Chemistry, Sacramento, California.

Following these presentations the delegates boarded buses to San Simeon where they had a barbecue luncheon of broiled steaks from the Cal-Poly feed lot, Spanish beans, and all the trimmings.

After the luncheon the delegates visited a range fertilization demonstration on the Hearst Ranch which had been run for two years in cooperation with the University of California Agricultural Extension Service. Russell R. Helphenstine, farm advisor of San Luis Obispo County and Lester Berry, extension range improvement specialist, University of California, Davis, reported on the results of this demonstration which last year had shown a net increase of 227 pounds of beef per acre on the fertilized field for a total cost of $14.81 per acre for fertilizer and application. On the basis of a current selling price of 25c per pound for choice grade beef the gross increase was $56.75 per acre. After deducting $14.81, the cost of fertilization, the increased net income per acre amounted to $41.94 due entirely to fertilization.

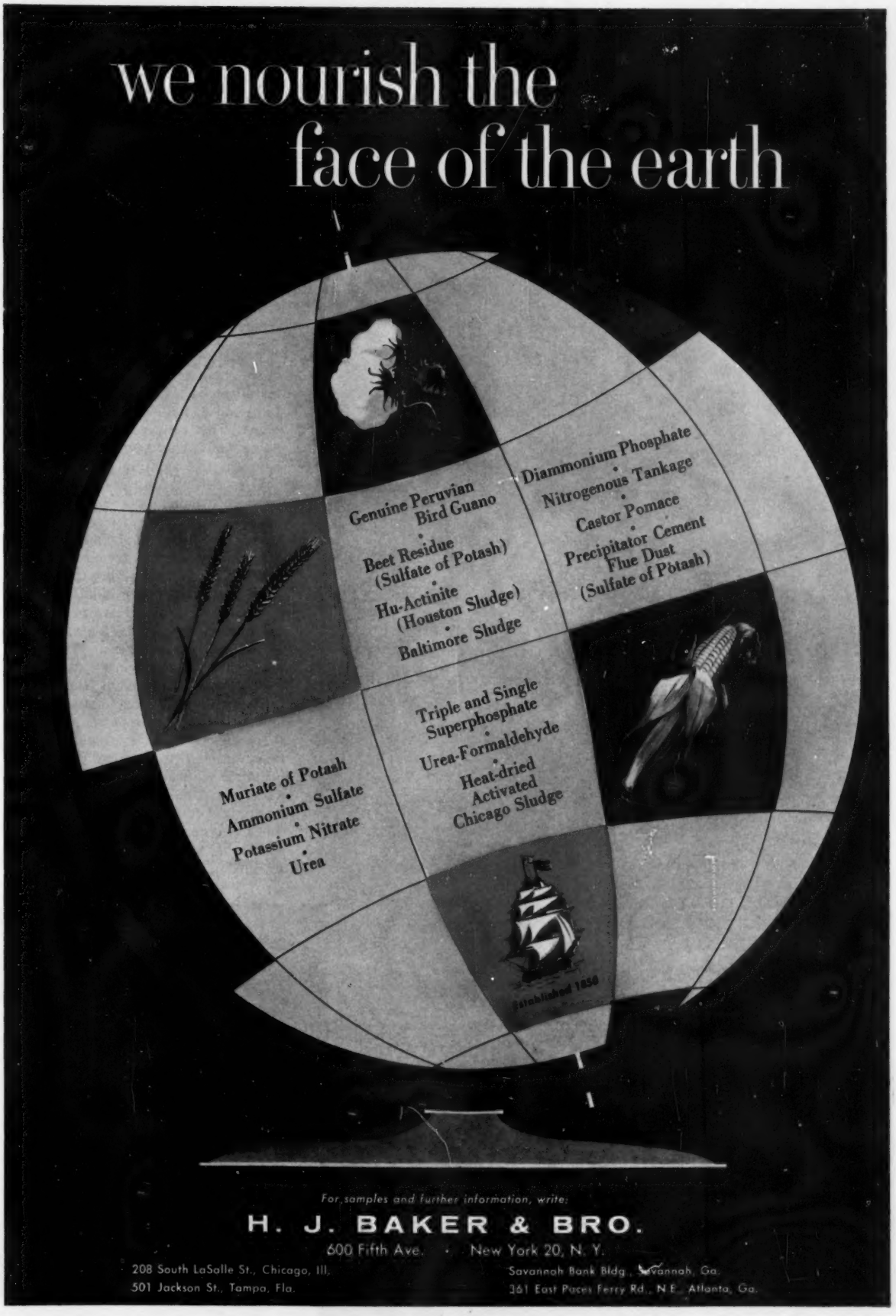
The following morning two panel sessions were held, one on "Range Fertilization" moderated by P. Curtis Berryman, director, San Luis Obispo County Agricultural Extension Service, and the other on "Crop Response to Sulfur," with R. L. Luckhardt, supervisor, Agricultural Service, Collier Carbon and Chemical Corporation as the moderator.

Members of the Range Fertilization panel included Russell Helphenstine, farm advisor, San Luis Obispo County; M. S. Beckley, farm advisor, Santa Clara County; Dr. Lyman Bennion, head, Animal Husbandry Department, California State Polytechnic College; Dr. R. Merton Love, and Lester J. Berry, both of the University of California, Davis; Dr. Logan Carter, head, Department of Soils, California State Polytechnic College, San Luis Obispo; and George Park, Rocca-Cuvi, Inc., San Francisco.

Members of the Sulfur panel included Dr. William E. Martin, Dr. Clarence M. Johnson, Dr. Victor V. Rendig, and Dr. Albert Ulrich, all of the University of California.

Enthusiastic audience participation in the question and answer period following each panel reflected a keen interest in the subject matter.

we nourish the face of the earth



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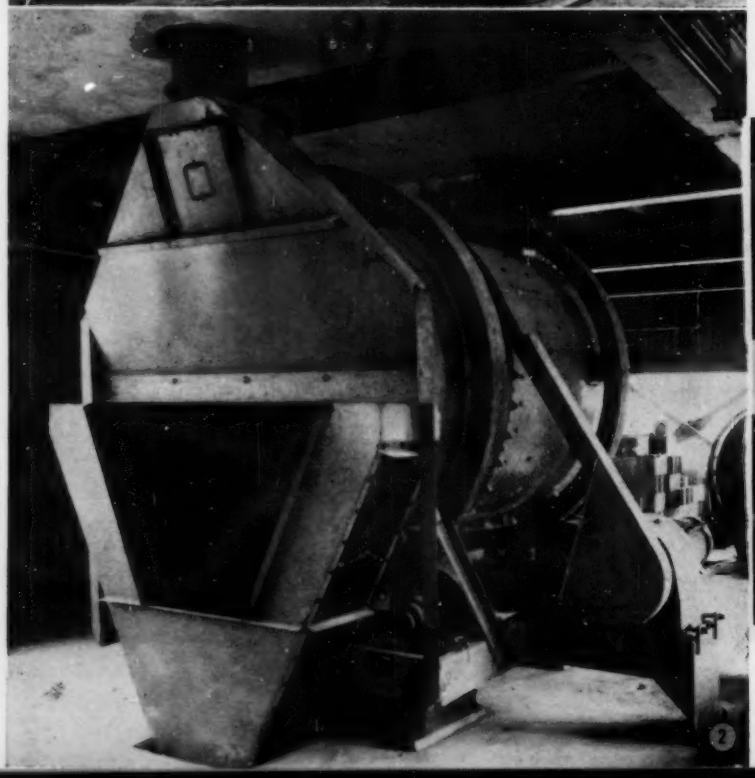
Canadian Industries Limited Readies Granulation Facilities at Chatham Plant

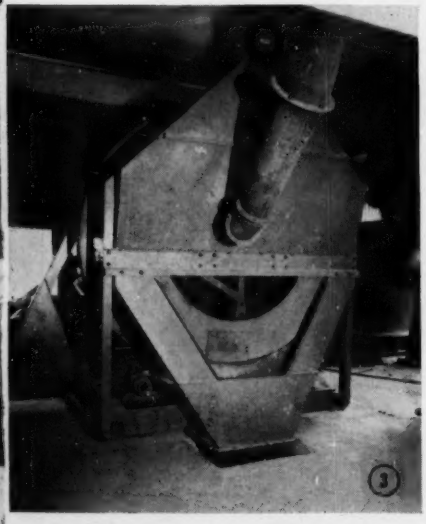
A continuous granulating process of the most advanced design is being installed by Canadian Industries Limited at its Chatham, Ontario plant. This new production unit is being housed in a separate building adjacent the existing plant.

The new building is of substantial reinforced concrete and steel frame construction, covered with corrugated asbestos roof and siding. Translucent panels are used in the side walls of the building to provide good natural lighting at all interior levels. The upper floors are of reinforced concrete and feature large work and service areas. The stairs are located in an enclosed stair well.

The overall effect of the entire building and the machinery is one of spaciousness and permanence.

An elevated conveyor gallery has been erected to connect this new building to the existing plant. This gallery will house the belt conveyor bringing pre-mixed dry blends to the new granulating process, as well as the second belt conveyor taking finished granular fertilizer to the





storage area of the existing plant.

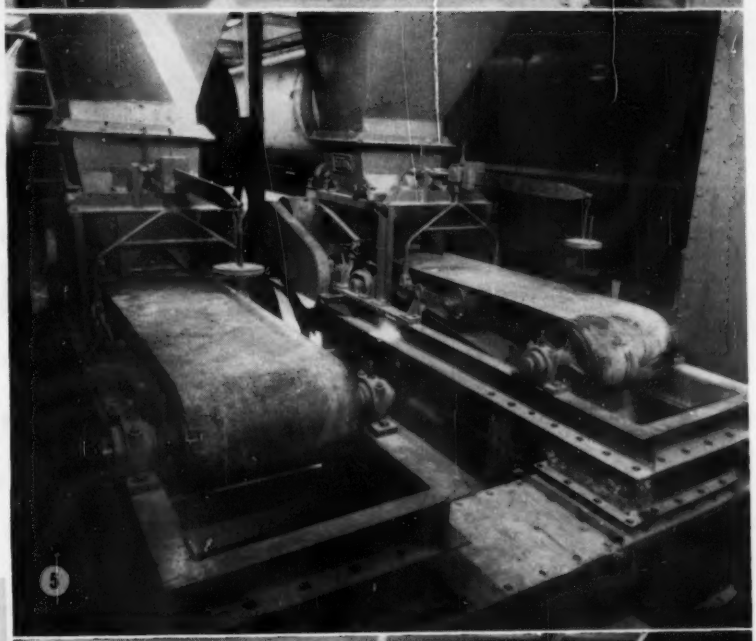
While the more or less normally-accepted materials flow is being used in the basic granulating process design, several unique features are being added which will accomplish a higher degree of production efficiency. Supplementing these features is an elaborate control panel cn which will be incorporated all flow controls, dryer controls, as well as various process instrumentation. This panel board and the electrical control center are being installed in a separate room handy to the ammoniator operator's work area.

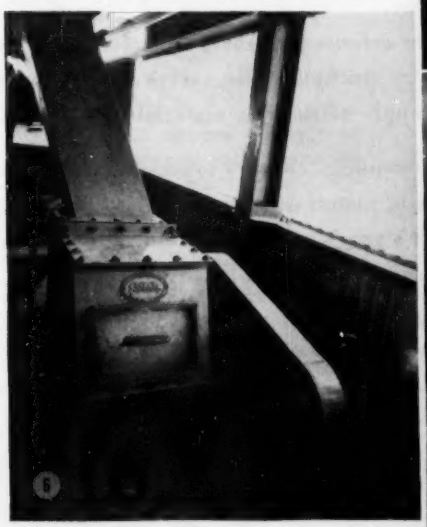
The engineering required for this modern granulation project was accomplished as a combined effort between the Engineering Departments of Canadian Industries Limited at Montreal and The A. J. Sackett and Sons Company of Baltimore, Maryland. The layout, detailing and fabrication of the machinery is being done by The A. J. Sackett and Sons Company, while the building design and field construction work is being handled by Canadian Industries Limited.

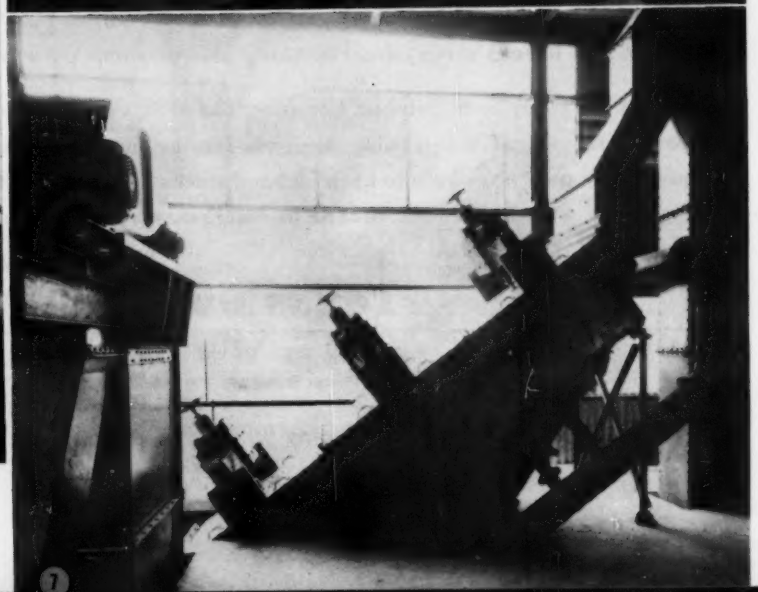
PHOTOGRAPHS

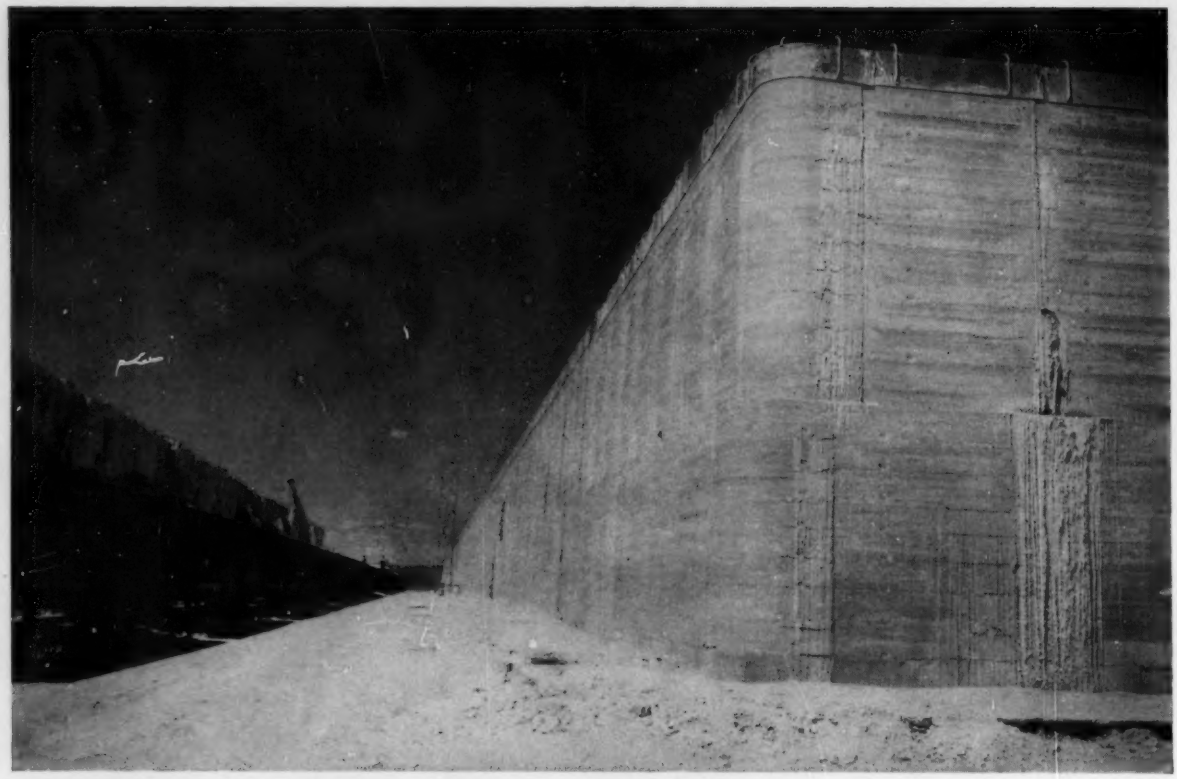
1. *Exterior view of new building which houses granulating process.*
2. *Discharge end view of Sackett STAR* Granulator.*
3. *T.V.A. type Continuous Deep Bed Ammoniator.*
4. *General view of Sackett Dryer and Cooler.*
5. *Continuous Weighing Machines for controlling initial feed and recycle.*
6. *View of new Sackett Hammerhead Type Chain Mill*.*
7. *Elevator head and electric vibrating screen showing manifold suction system.*

*U.S. and Foreign Patents Pending.









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The policy of Texas Gulf Sulphur Company has always been to stockpile . . . always producing *extra* for the future. In spite of the growing demands for the important basic material it produces—Sulphur . . . the company's policy has been to keep on hand stocks equal to about a year's normal demand. With such a supply, it can make shipments, routine or emergency, of any tonnage, at any time, by any method.

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Worland, Wyoming

ALABAMA

Liquid Fertilizers, Inc., operating under a TVA patent and utilizing the services of TVA engineers in getting underway, have opened their plant in Greensboro.

FLORIDA

Nitrogen Division is building two large-volume nitrogen solution storage terminals in Florida. Both are on the St. Johns River, one at Jacksonville, the other at Sanford. Both are due to be ready by late Summer, and both will store Urana and Nitrana solutions. Solutions will be shipped by water from the Hopewell plant, and by truck from the terminals to customers.

The Pelham Phosphate Company of Pelham, Georgia recently adopted a new package design for its complete line of fertilizer products. Two packages, illustrating both the old and new designs, are shown here. The new design at the right was created by Union Bag—Camp Paper Corporation. More liberal use of color gives the new package better attention value and impact. A farm scene gives a pictorial representation of the product's end use. The new design gives product and analysis information on both ends of the bag as well as in the gussets, and insures immediate identification of the product in the warehouse.

ILLINOIS

Steve Turner, Pontiac, has set up a $1500 prize contest for hybrid corn growers, according to his always breezy "Farm News." The prizes range from a half-karat diamond ring to a bushel of hybrid seed corn.

IOWA

Ris-Van Inc., West Union, has purchased 2 bulk storage plants from **Goodland Agricultural Chemicals.** The plants are at Winthrop and Wyoming. Ris-Van operates a liquid fertilizer plant in West Union.

KENTUCKY

Southern States Cooperative have awarded to **A. J. Sackett** the general contract for erection of their first granular plant. To be located at Russellville, it will cost $750,000 and have a capacity of 60,000 annual tons. Highly mechanized, it will require a maximum of 25 per shift at height of the fertilizer seasons. The plant will consist of one mixing mill, two bagging mills and 10,000 tons of storage area. Storage tanks will hold 60,000 gallons of liquid materials. Fertilizer both bulk and bagged will be available at the plant. Production is scheduled for Spring. This will be the 8th Southern States plant in their 6-state area.

A reactor to be used in the production of urea at Spencer Chemical Company's Henderson (Ky.) Works is shown here being set into position. Construction of the plant, which will have a 100-ton-per-day capacity, is expected to be completed sometime this summer. Weighing 85 tons, the reactor shown here has a 5½-inch-thick shell designed to withstand the high temperatures and pressures of the urea process. Spencer will produce Urea (44% nitrogen) here, primarily for fertilizer use. It will be marketed both as a solid material in prilled form and as a component in nitrogen solutions. The new plant will be Spencer's second urea facility. The first, a 33 ton-per-day unit at the company's Vicksburg, Mississippi Works produces solutions only.

Elkton Farm Supply, Inc. has been chartered at Elkton for $100,000 to manufacture and deal in fertilizer and other farm supplies. Incorporators: **Carrol Barnard, W. J. Lear, Brenton Craver.**

MAINE

Seacrop Inc., Portland, is canning and marketing a liquid organic plant food, made from seaweed, which they import from Europe. Paul S. Laughlin, general manager, says they expect to produce it in this country when the market has been established.

MISSISSIPPI

First Mississippi Corporation plans a $225,000 phosphate facility at Pascagoula, which will be operated under an agreement with **Coastal Chemical.** Capacity would be 30,000 annual tons. Final plans depend upon local financing.

* * *

Farm Chemical and Fertilizer Corp., Bay St. Louis, has been chartered with capital of $25,000.

* * *

Banks Tank Co., Vicksburg, held a formal opening May 9-10 of their operation. They purchased the plant of the Dallas Tank Co. of Vicksburg and will produce, among other things, anhydrous containers.

MINNESOTA

Western Fertilizer Association members have voted to consolidate with **Central Farmers Fertilizer,** Chicago. Members of CFF vote on this June 12, and as the original merger proposal came from CFF, the result is expected to favor the plan.

Another big bite of Trebo-Phos triple superphosphate from American Cyanamid Company about to be loaded onto the line of freight cars in background. Barge pictured here recently arrived at Cincinnati, O. from Tampa, Fla. after a voyage across the Gulf of Mexico and up the Mississippi and Ohio Rivers. The triple superphosphate, distributed to Midwest fertilizer manufacturers, being processed from natural phosphate deposits by Cyanamid at Brewster, Fla. Additional barge-loads were shipped to St. Louis, Omaha and Minneaoplis.

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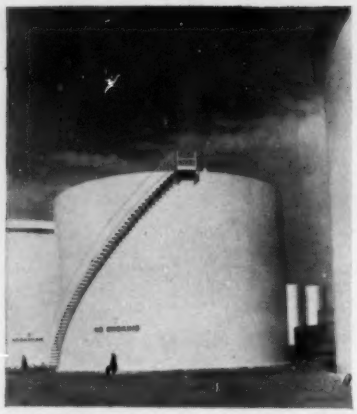


Something new in the storage and distribution fields is a "liquid warehousing facility." Memphis Mixed Products Terminal Corporation says that this is the first time that a tank farm operation has been made available to distributors, manufacturers, and shippers on a lease basis. Located on an 11-acre site in Memphis (Tenn.) Harbor on President's Island, tanks have already been built for the storage and dispensation of petroleum jelly and liquid fertilizers. Since each different product requires different tank specifications, the tanks are being built as contracts for their use are negotiated. The new facility will be used as an accumulation or distribution point or both. Economies are affected because of cheap river transportation and because of economical loading and unloading of barges and tanks. The average tank to be built will accommodate 600,000 gallons of liquid. Larger and smaller tanks will also be built according to the manufacturer's requirements. — Memphis Mixed Products Terminal Corporation, 1304 Channel Avenue, President's Island, Memphis 6, Tennessee, J. Larry Johnson, president.

NEW YORK

The **Gregory Doyle Fertilizer** plant, Huntington Park, L. I., was rocked by the explosion of an air compressor, injuring 3 and blowing a hole in the roof.

OKLAHOMA

Nichols Seed Fertilizer, Oklahoma City, are making a $200,000 expansion in their plant just outside the city. This is the second expansion in 2 years. The new warehouse will have the most modern materials handling equipment. The company office will be moved there as new quarters are provided in the plans.

• • •

Boss Fertilizer is building a 150 ton plant at Moberly.

TEXAS

Fidelity Chemical, Houston, the State's oldest and Houston's first fertilizer producer has sold all rights to Ferti-Loam and has quit the fertilizer and cottonseed oil processing business. **Hi-Yield** of Bonham has purchased the Ferti-Loam rights, inventory, some equipment and its distribution system. **Herbert Smith,** Hy-Yield president, says plans are for expansion of the Ferti-Loam distribution.

WASHINGTON

Kerley Chemical is in operation with its mixing plant near Kennewick. Their Nitro-Sul will be distributed from the new plant to four Pacific Northwest states.

BRITAIN

Scottish Agricultural Industries are building on land reclaimed from the Firth of Forth, selected for its deep water facilities, a mixed fertilizer plant rated at 150,000 tons.

CHINA

The Dairen fertilizer plant is being expanded to treble its annual output. The **Nanking Yung-li** works is adding capacity to produce 80,000 additional annual tons of ammonium sulphate. Japan has heard a radio report that a plant now building in Honan Province will have a capacity of a million annual tons, and be ready to roll in 1962.

EIRE

Ireland may one day have a nitrogenous fertilizer plant based on the successful peat operation at Feucho in France. Here peat is transformed into gas, a new method which has won the adherence of three Irish experts who recenlty visited Feucho.

ISRAEL

Construction Aggregates Corp., has a plan by which a million annual tons of potash and chemically pure salt may be transported via pipeline from the Dead Sea to the Mediterranean.

JORDAN

Arab Potash Co. has awarded to London's **Manderstram** concern the contract to rebuild the potash plant on the Dead Sea. They are also figuring on a superphosphate plant for **Jordan Phosphate Mines Co.**

PAKISTAN

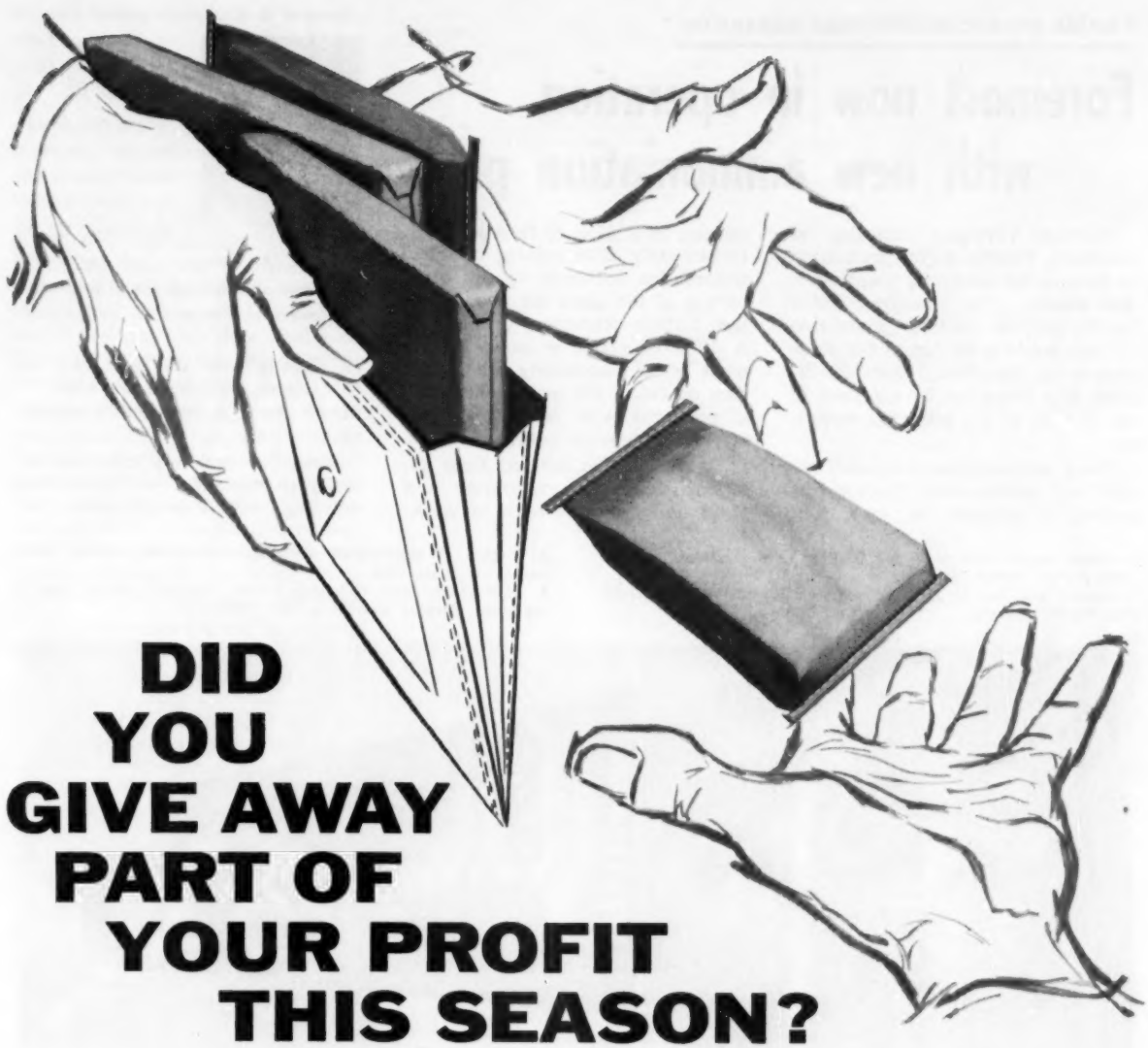
East Pakistan's fertilizer materials works will get under construction immediately with Japan's **Kobe Steel Works** doing the job.

SOUTH AFRICA

African Explosives and Chemical Industries has awarded construction contracts for additions to be made to their #2 ammonia unit at Modderfontein.

TURKEY

Badische Anilin und Soda Werke of West Germany are installing equipment costing $39,270,000 in the plant at Kutahya which will cost over all some $75,000,000 and is to be ready early next year. It is slated to produce 9,000 metric tons of nitric; 1000 of ammonium nitrate for explosive purposes, 110,000 tons of nitrogenous fertilizers.



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Florida producer continues expansion

Foremost now in operation with new ammoniation plant

Foremost Fertilizer Company at Leesburg, Florida began production in its new ammoniating plant early last month. The recently added facility will be used for production of base goods to be fed to the older section of the plant, where operations will hereafter be confined to dry mixing of the prepared materials.

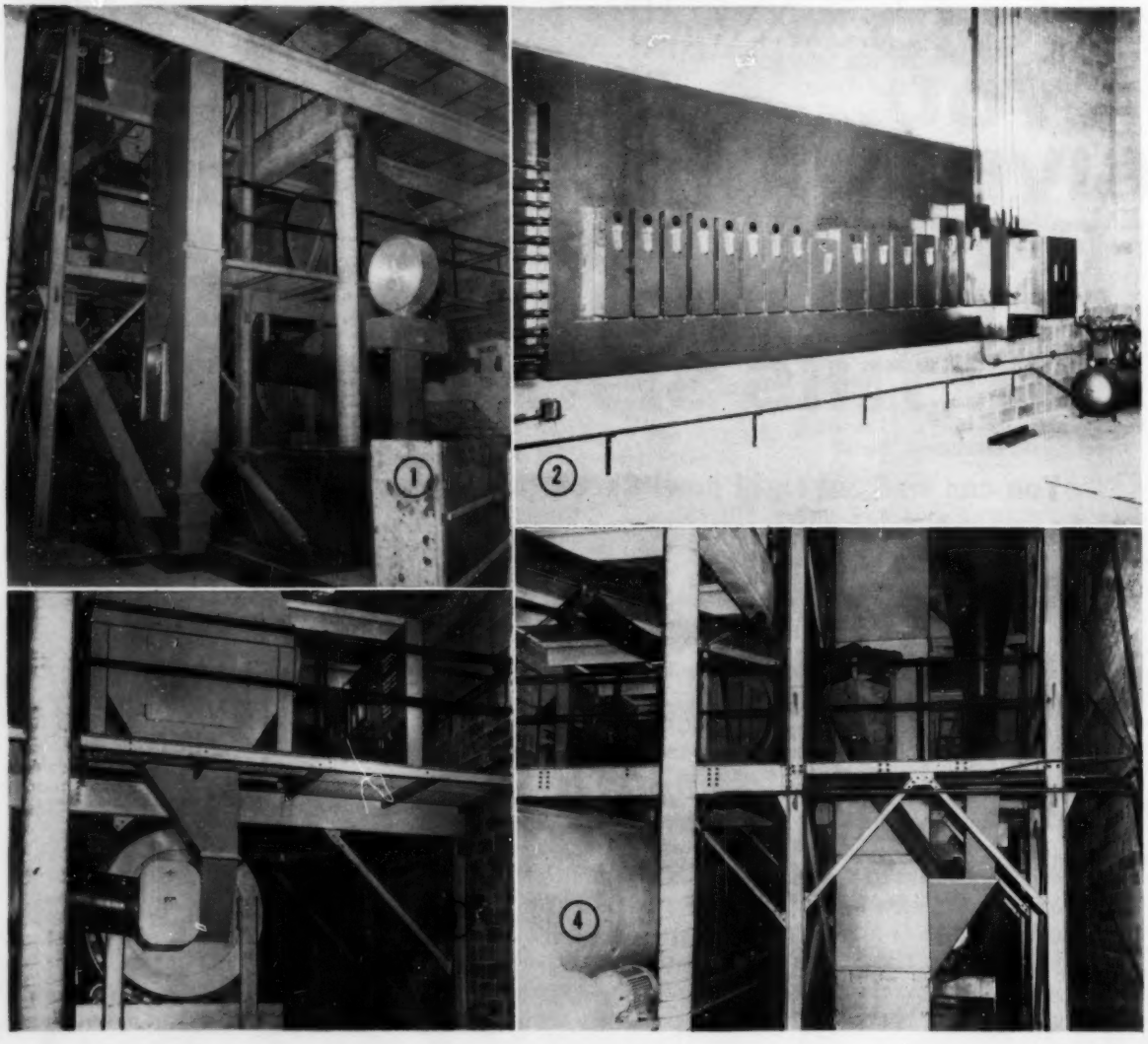
Using conventional methods, the unit will continuously produce two grades of material in quantities ranging from 20 to 35 tons per hour. Immediately after mixing, the fertilizers are conveyed to the older section of the plant for storage before further processing or bagging. A 10-10-10 grade is being formulated at 20 tons hourly with three men operating the plant, and 8-16-0 is produced with only two operators at 35 tons an hour.

All nitrogen is derived from solutions, which can be stored in a 12,000-gallon outside tank, or worked directly from the tank car; the 66° Baume sulfuric acid used is drawn from a 5000-gallon storage unit.

Potash is the only material actually stored in the new processing building, with superphosphate be-

Norwood A. Lockett is general manager of Foremost Fertilizer. Having joined them since the turn of this decade, he has played a major role in the company's 'several' expansions during the past few years, as their output has more than quadrupled since he became affiliated with Foremost.

1. Dump hopper and scale for feeding solid materials, viewed from potash storage area.
2. Starter and control panel; compressor for nitrogen solutions feed visible at right.
3. Picture of ammoniator discharge into cooler; meter panel visible on upper deck.
4. Photograph from alongside cooler discharge shows recycle convevor. elevator number 2, and cyclone.



ing worked directly from the rail car.

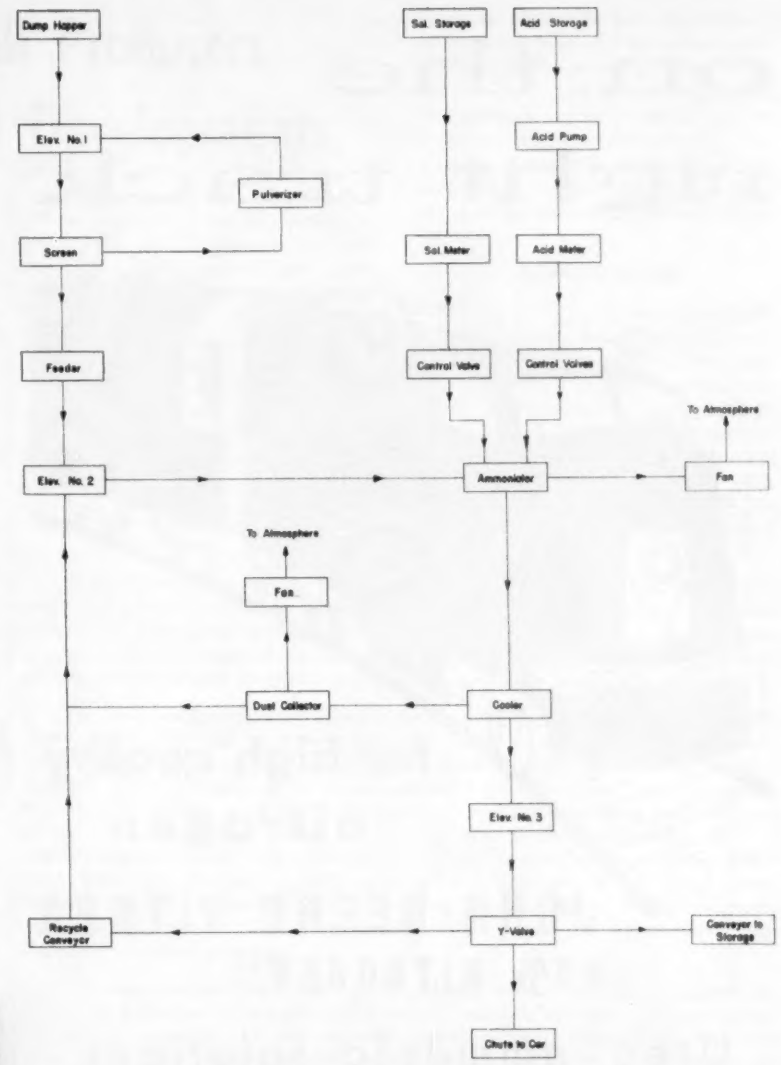
Designed and equipped by Fertilizer Equipment Sales Corp. of Atlanta, Ga., the structure itself is of concrete block construction with reinforced concrete floor poured on grading, and features prestressed concrete beam roof support covered with five-ply gypsum roofing material. The two monitors projecting above the roof are constructed of steel and fiberglass with louvers for ventilation. There are no windows in the building, with doors and ventilating louvers in the monitors being the only wood used.

Overall dimensions of the structure are 85 by 32 feet, with a 24 by 15 foot "L" offset to provide tractor shovel working area at one corner. The belt conveyor carrying the product to the main plant is housed in a 54-foot bridge across the rail sidings that serve the plant; this bridge is 7 feet wide and 6 feet high.

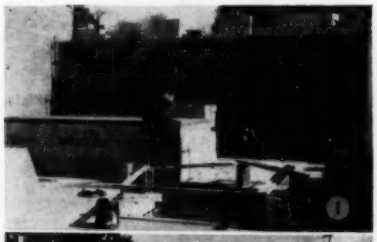
Solid materials are fed to a dump hopper which has a double-face dial on the scale; one tractor shovel feeds superphosphate, and another shovel discharges potash into the hopper from the opposite side when 10-10-10 is being manufactured; the potash shovel operator controls the hopper dump. After screening, a weigh-feeder charges the ammoniator via an elevator. A tailings pulverizer reduces oversize material and returns it to the feed.

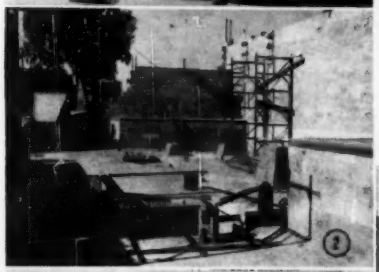
Polyvinyl chloride piping and valve bodies handle the liquid materials; compressed air brings in the solutions and a Labour centrifugal pump feeds the acid, while both acid and solution are measured by Fischer & Porter armored Flowrators with Magnabond recorders, flush mounted in a panel alongside the ammoniator.

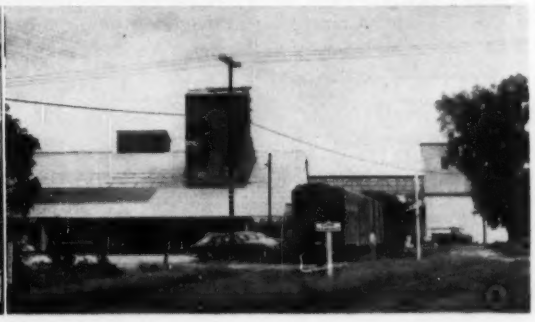
The 6 x 10 foot ammoniator has



Flow diagram of new ammoniating plant







1. Norwood Lockett peers into elevator pit during early phase of construction.
2. View in opposite direction shows equipment awaiting installation.
3. Monitors begin to take shape above structure; solutions storage tank at left.
4. Major equipment in, final wall begins going up.
5. Completed ammoniating plant at right is almost hidden behind moss-draped tree, but conveyor bridge linking it to main plant is clearly visible above rail siding.

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a gravity discharge into a 6 x 40 foot cooler below. A vacuum feed to the cyclone passes only clean air through the fan. Totally enclosed, fan cooled Louis-Allis motors power the roller chain drives used on the ammoniator and cooler; the motor for the cooler has a fluid coupling to the gearbox. Allen-Bradley starters and controls are utilized throughout.

PCA Extends TelAutograph Service in Plants

Potash Company of America, which had already installed the telescriber system between Washington, D. C. and the home office, has now installed TelAutograph between the traffic department and railroad loading docks. Written orders are thus transmitted as fast as people can write.

Chase Goshen Plant Gets Safety Award

Presentation of the annual Chase Bag Company Safety Award was made to its branch in Goshen, Indiana, recently by F. H. Ludington, Jr., vice president. The plant, which employs over 300 persons, worked the entire year without a disabling industrial injury. It won over 13 other Chase factories which make textile, paper, laminated textile, film, mesh and other types of bags and packaging materials.

The Indiana branch also is one of the only two Chase branches ever to exceed a million manhours worked continuously without lost time accident.

Now it is again on the way to establishing a record, with 680,000 accident-free hours since the last industrial injury.

Dyes Grass and Fertilizes, Too

A cartridge that goes into the hose line and turns the grass an even green while watering is also a fertilizer. Called "Dyna-Green" it is made by Leeds Chemical Products of Chicago.

Celery Likes Epsom Salts

Celery growers have been told by Michigan State researchers that epsom salts, a cheap source of magnesium, are good for celery plants that are yellowing, weak, susceptible to blight.

TVA Invites Small Producers To See Technical Developments

Charles H. Young, TVA manager of Chemical Engineering, has invited small fertilizer producers to familiarize themselves with the technical developments available to them at the TVA Fertilizer-Munitions Development Center, Muscle Shoals, Alabama, for use or adaptation to their operations.

"Twenty-five years of TVA fertilizer research and plant operation have produced a large store of technical information and experience of great help to manufacturers," Mr. Young said. "To an increasing extent, the fertilizer technology developed here is becoming applicable in the small fertilizer plant. We want to be sure that no small company fails to make use of the assistance available simply because it does not know about it, is apprehensive of the cost, or has the mistaken impression that TVA developments are useful only to large companies."

Mr. Young pointed out that the research and development facilities at the Muscle Shoals Center are open to industry representatives, research and operating personnel are available for consultation, patented developments are licensed for industrial use, all without royalty or other charge. He described the following processes and equipment which are being widely used or can be more widely used by small fertilizer producers:

Ammoniation and Granulation

The art of ammoniating and granulating fertilizers is of primary importance to the entire fertilizer industry. TVA has been studying this art for some five or six years and has turned out a number of very useful advances. The TVA ammoniator-granulator—essentially a rotating drum—is now used in well over a hundred plants, large and small. Fifteen equipment manufacturers have built and installed the unit in plants throughout the country. It can be used to make high-analysis granular products with various commonly available materials such as ammonia, nitrogen solutions, solid nitrogen materials, superphosphates, diammonium phosphate, sulfuric or phosphoric acids, potash, etc.

A high degree of ammoniation can be reached in the equipment to make best use of low-cost nitrogen materials. Requirements and techniques have been developed by the TVA investigators for numerous formulations, including 12-12-12, 10-20-20, 5-20-20, 0-20-20, 20-10-10, and others. High-analysis fertilizers such as 17-17-17 and 16-48-0 can be made in the ammoniator with nitrogen solutions, phosphoric acid, and potash.

Granular superphosphate can be made in the unit. Both the mixing of rock and acid and the granulation are done in the rotating drum which, in this case, acts as an acidulating and granulating unit rather than an ammoniating and granulating unit. Thus, it is possible to use this single piece of equipment for making either superphosphate or mixed fertilizers.

Superphosphates

TVA's continuous superphosphate mixer, a simple cone, is being used in many small plants. A few years ago only triple superphosphate was made in the cone. Now it is a production unit in many ordinary superphosphate plants. Equipment manufacturers have designed efficient, low-cost plants around the cone mixer, and superphosphate of

As an illustration of how the nation is using its fertilizer research and development program, TVA has issued this map showing the location of 140 industrial plants licensed to use TVA development processes or equipment. The map is keyed to show location of plants using the continuous ammoniator, the superphosphate mixer, a liquid fertilizer process, phosphorus and phosphoric acid processes, and other processes or equipment.

The most widely applied development, as shown by its use in well over a hundred plants, is the TVA-type ammoniator-granulator which provides the fertilizer industry an economical way of making high-analysis granular fertilizers with readily available materials. About two thirds of the country's granular fertilizers are made in this type of equipment. The cone mixer for producing superphosphate is becoming well-known as simple and economical equipment for the continuous production of either triple or ordinary superphosphate. Application of TVA liquid fertilizer processes is just beginning. Other new processes are under study in their laboratories which should permit the production of cheaper and more concentrated liquid fertilizers. In the phosphorus and phosphate chemical field, TVA contributions are widely used by commercial producers of elemental phosphorus.

The map indicates but a part of the technical services provided to industry by TVA. An indication of the value of this research and development is the large number of chemists, engineers, and other technical representatives of industrial concerns who come to the TVA installations to obtain information. Since 1945 about 8,000 representatives of industry have visited Muscle Shoals. During 1957 over 1100 technical visitors were received. Nearly 10,000 items of technical information have been supplied by correspondence since 1945. The figure for 1957 was 1366. About 86,000 reprints of articles and other technical and semitechnical reports covering the results of the TVA work have been distributed since 1945.

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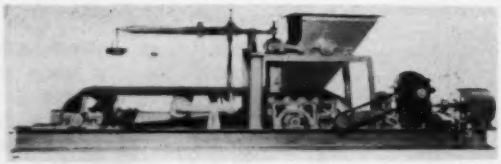

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The TVA engineers have obtained a great deal of information on the production of enriched superphosphate, as well as the ordinary and triple types.

A superphosphate of very high P_2O_5 content—55 per cent—is being produced experimentally with rock phosphate and superphosphoric acid, another product of the TVA research. More information on superphosphoric acid is given below, under "Liquid Fertilizers."

A TVA process that may prove to be particularly useful to the industry is one in which superphosphate is produced for immediate ammoniation. By using finer rock and an excess of acid more dilute than is the usual practice, the TVA investigators found that superphosphate, either ordinary or triple, could be produced ready for ammoniation in just one hour. This process makes possible the immediate production of mixed fertilzers and eliminates the need for a large inventory of superphosphate.

Using Concentrated Materials in Mixtures

Considerable study has been given the use of concentrated materials such as diammonium phosphate, urea, calcium metaphosphate, granular potash, and others, in the production of high-analysis fertilizers. Numerous formulations have been made as dry mixtures and as granular products. They have been studied to determine chemical compatibility, segregation characteristics, and storing and drilling qualities. Some of the grades made in these experiments are 18-18-18, 16-32-16, 11-28-28, and 26-26-0. The data from these tests are of particular interest to dry mixers and bulk blenders.

Liquid Fertilizers

Two big problems in improving liquid fertilizers are to make more concentrated liquids and to use cheaper materials. The newly developed superphosphoric acid, now being produced experimentally and distributed by TVA for testing, is a big help in making better liquid fertilizers.

The acid is over 40 per cent more concentrated than the usual commercial phosphoric acid and can be used to make mixed liquid fertilizers containing 40 or 50 per cent more plant food. Increasing concentration of liquids saves on storage and handling for producer and farmer.

The super acid also enables the production of stable liquid mixtures with low-cost "green" or wet-process phosphoric acid. Adding a fairly small proportion of super acid to the green acid before ammoniation enables one to make a fairly clear solution that will not deposit a lot of solids in tanks and lines.

Only TVA makes super acid at present, but the process is ready for commercial producers.

Technical help on these and other developments is freely available to fertilizer producers. This applies especially to the small companies that have few or no technically trained employees.

Tull Holds Open House

The Miami Branch of Tull Metal & Supply, Atlanta, held open house to celebrate the formal opening of the new 50,000 square foot warehouse, which represents an investment of some $500,000. It is equipped with the latest types of handling, cutting and shearing machinery. Docks are so constructed that trucks and railroad cars may be loaded or unloaded in any weather.

Fifteen percent of all fertilizer mixtures today are granulated, it has been estimated by the USDA.

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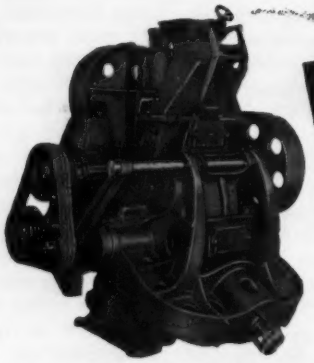

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PEOPLE in the Industry

IM&C

Louis Ware, since 1939 president of International Minerals & Chemical, has become board chairman and chief executive officer. His son, Thomas M. Ware, 39, becomes the fifth and youngest president of the 50-year-old corporation. He joined them in 1947 and during the next five years of major company expansion directed construction of new facilities as chief engineer. He has been administrative vice-president since 1955.

Louis Ware

T. M. Ware

Maurice H. Lockwood, Plant Food division vice-president, resigned that post effective June 1. He joined them in 1948 after two years as the first full-time president of National Fertilizer Association. Mr. Lockwood was recently honored by University of Connecticut alumni, with their Recognition Award.

Lockwood

John D. Zigler, 25 years with IM&C, now heads up the Plant Food division, of which he has been general manager since 1956.

Zigler

Patton

Omar L. Patton of Hamilton, O., has been appointed assistant manager of sales training, Agricultural Division, American Cyanamid Company, B. F. Bowman, divisional director of marketing has announced.

Patton

Mr. Patton will assist E. F. Loats, manager of sales training. The appointee was formerly a district sales manager, located in Ft. Wayne, Indiana.

Riemer

Hugo Riemer, president of the Nitrogen Division since it was formed in 1952 and with Allied Chemical before that since 1935, left the company early last month.

Myers

Max Myers has been named administrator of the U. S. Foreign Agricultural Service, succeeding Gwynn Garnett, who has gone with Pan American Airways. Dr. Myers has been on the staff of South Dakota State since 1946, and was made head of the economics department in 1950.

Manning

Dr. Paul V. Manning will retire June 30 from International Minerals & Chemical, in accordance with their retirement plan, and will become professor of chemical engineering at Caltech. He has been with IMC for 17 years.

Yoast

Loren A. Yoast has been made general manager of Fruit Growers Supply Co., Los Angeles, a post made vacant April 21 by the death of H. A. Thomas, Jr.

Inglett Co.

At a recent meeting of the Inglett Company held in Augusta, Georgia, three members of Union Bag-Camp Paper Corporation were elected to the board of directors. They are S. K. Bradley, vice president in charge of bag sales; A. Lawson Sopp, comptroller, and W. F. Jacobi, director of package engineering. Inglett Company manufactures packaging equipment which is sold through the Union-Camp organization.

Whitlock

Walter W. Whitlock has joined Texaco's Petrochemical sales division as a sales engineer, according to G. E. Garland, The Texas Company's petrochemical sales manager. His headquarters are at the Company's regional sales office in the McCormick Building, Chicago.

Whitlock

Mr. Whitlock will give technical assistance to fertilizer manufacturers and other users of ammonia and nitrogen solutions.

Clopton

John B. Clopton has been named director of sales of Escambia Chemical Corporation, R. U. Haslanger, president, announced.

Mr. Clopton has been in the sales organization since early last year. He will direct sales of the company's products, including ammonia, nitric acid, ammonium nitrate, nitrogen solutions, methanol and polyvinyl chloride resins, produced at its three plants near Pensacola, Florida. His office is in the company headquarters at 261 Madison Avenue, New York.

Spencer

Spencer Chemical Company has named two men, Dr. Nat C. Robertson and Dr. O. V. Luke, to top positions in its Research and Development Division. Dr. Robertson was elected vice president in charge of research and development, responsible for managing all of Spencer's research and development activities. He joined Spencer on February 15 as general manager of research and development.

As director of central research, Spencer has named Dr. O. V. Luke, who will manage all activities of the company's Research Center, including work in the fields of plastics, industrial and agricultural chemicals.

Both men have had considerable chemical research experience. Before joining Spencer Dr. Robertson was a vice president and director of research for Escambia Chemical. Dr. Luke was formerly manager of plastics research for the Celanese Corporation of America.

Gulick

Potash Company of America announces the appointment of Russell L. Gulick as sales representative for Florida. He will work in conjunction with Paul C. Ausley, Orlando, and will be under the general supervision of W. H. Appleton, Southern sales manager. Mr. Gulick, who will make his headquarters in Atlanta, for the past few years has been associated with the fertilizer industry in the Middle Atlantic states.

Gulick

New 500 TPD Concentrated Fertilizer Plant Now On Stream

for Scottish Agricultural Industries Ltd....

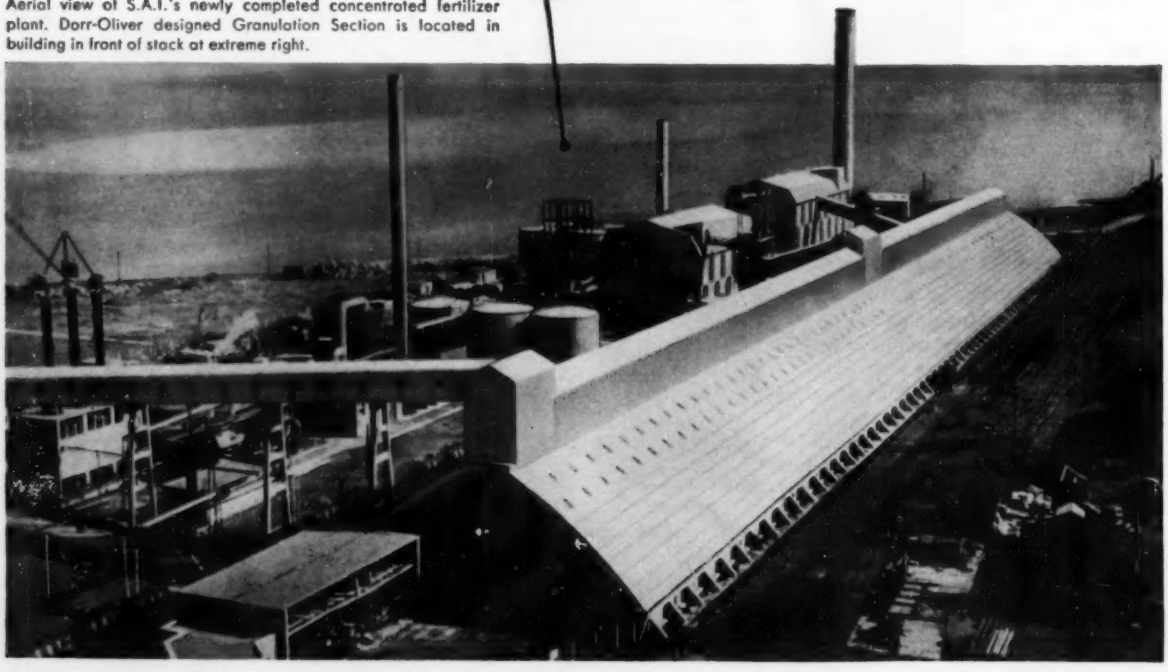
Granulation section designed by Dorr-Oliver Incorporated

On March 17, 1958, Scottish Agricultural Industries Ltd. inaugurated their new 8.5 million dollar plant at Leith, Scotland, for producing ammonium phosphate based complete granular fertilizers. The new Leith plant includes three main process units—sulfuric acid production, phosphoric acid production and a fertilizer production section. The fertilizer section, designed by Dorr-Oliver Incorporated, utilizes the world-wide accepted Dorrco Granular Fertilizer Process.

Dorr-Oliver Project Sales Division, with over 41 years' experience in the field of concentrated fertilizer production via the wet process of manufacturing phosphoric acid, is staffed by engineers qualified to handle all phases of fertilizer plant design — from benefication of phosphate rock through laboratory studies and economic evaluation, to supplying a complete plant regardless of size.

DORR-OLIVER
INCORPORATED
WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT
STAMFORD • CONNECTICUT • U. S. A.

Aerial view of S.A.I.'s newly completed concentrated fertilizer plant. Dorr-Oliver designed Granulation Section is located in building in front of stack at extreme right.



Sattler

Robert E. Sattler. formerly teaching assistant in the agronomy department of the University of Illinois, has been appointed a sales representative of The Texas Company's petrochemical sales division, according to G. E. Garland, division manager.

Mr. Sattler will call on fertilizer manufacturers and other users of ammonia and nitrogen solutions in Wisconsin and Minnesota. His headquarters will be in Texaco's regional sales office in the McCormick Building, Chicago.

Continental Gin

Merrill E. Pratt, president of Continental Gin Company since 1938, was promoted May 15 by the company's directors to chairman of the board and Eugene H. Brooks, executive vice-president, was elected president and chief executive officer. The board also elected Richard T. Dorsey, vice-president in charge of the company's gin division.

These promotions and re-election of the company's other officers were announced by George Woodruff, Atlanta, chairman of the executive committee, following the directors meeting in the company's offices.

Mr. Pratt served in various capacities and departments of the company from 1916 until his election as president in December 1938. Mr. Brooks came with the company in 1922. Mr. Dorsey began his career with Continental Gin in 1937.

C. S. Johnson Co.

The C. S. Johnson Company (Koehring Company subsidiary) has announced changes in its sales organization:

Harold E. Buckler, former sales manager of the Western division for the Johnson Company at Stockton, California, has now been placed in charge of all sales for the company and will be located at its home office in Champaign, Illinois. Mr. Buckler has been with the company since 1941.

Jack D. Shoemaker, who has been active in sales with the Western division for the past six years, has been appointed sales manager of the Johnson Western division.

A. K. Downs will devote the greater part of his time to an expanded sales program dealing primarily with large automatic concrete plants and special plant installations.

The full line of Johnson batching and mixing equipment has now been made available from its Stockton, Calif. operation, complete with parts and service facilities.

Dorr-Oliver

Dorr-Oliver announces the elections of James B. Hoxie as vice president for production and Albert L. Morris as vice president for company relations. Both newly elected officers of the company have been directors of their respective departments for a number of years. As vice president for production, Mr. Hoxie will continue overall administrative direction of the company's wholly owned manufacturing plants in Oakland, California and Hazleton, Pennsylvania and of equipment procurement from outside sources. Mr. Morris continues overall administration of Dorr-Oliver corporate, public and personnel relations.

Mr. Hoxie has been a member of the board of directors of the company as well as director of production since January 1955. He has served with Dorr-Oliver and the D-O predecessor firm, Oliver United Filters Incorporated for 26 years in various production engineering and management and sales capacities.

Mr. Morris, director of company relations the past two years, joined the predecessor Dorr Company in 1937. With the formation of Dorr-Oliver Incorporated in January 1955, he was named director of public relations.

Gormel Plant Food

Charles I. Diehl, with Gormel Plant Food Products Co., Rochester, N. Y., for 13 years, has been appointed executive vice president. New operations manager is Richard Houghton, associated with Gormel for the past 13 months.

Other promotions: Mrs. Irving Diehl to laboratory technician in charge of the chemical department; Peter Firito to superintendent in charge of fertilizer manufacturing and lawn seed blending. James Morris, who recently joined Gormel, is now foreman in charge of service.

Arnold

Potash Company of America has announced the appointment of Fred G. Arnold as sales representative for the North Carolina - South Carolina and Virginia territory. Mr. Arnold will make his headquarters in Raleigh, North Carolina, 2022 St. Mary's Street, telephone Temple 4-1786. He has had extensive experience in both the sales and purchasing fields; for the past eighteen months he has been working out of their general sales office.

Arnold

Allen

A. F. Clauss, vice president and general manager of Highway Equipment Company of Cedar Rapids, Iowa, manufacturers of spreaders and bulk delivery equipment, announces the appointment of Gale E. Allen as general sales manager.

Mr. Allen is a veteran of almost 30 years service in the manufacturing and retailing phases of construction, agricultural, and industrial machinery.

Stauffer

Iver Macdougall has been elected assistant secretary of Stauffer Chemical Company, New York. He joined Stauffer as an administrative assistant in 1953. Prior to that, he was engaged in private law practice in Nashville, Tenn.

Klicker

Michigan Chemical Corporation of Saint Louis, Michigan, announces appointment of Everett E. Klicker as market research manager. He will assist H. Stanley Lawton, vice president of sales and development, in extending the markets for the company's basic chemicals and their derivatives. Mr. Klicker formerly was sales and development manager of the Rare Earths and Thorium Division of Michigan Chemical. He was employed six years by International Minerals & Chemical Corporation where he served as product manager in a chemical sales department. Prior to joining Michigan Chemical in 1956, Mr. Klicker was supervisor of market development in the technical division of Pennsalt Chemicals Company.

Nichols

Bill Nichols, vice president, Sylacauga Fertilizer Co., recently was elected by a large majority to the Alabama State Legislature from Talladega County.

Hoffman

International Minerals & Chemical Corporation has appointed Harold W. Hoffman as an agricultural sales representative in its potash division's district sales office in Shreveport, Louisiana. In his new position Mr. Hoffman will be responsible for agricultural potash sales in Louisiana, Texas, and Southern Mississippi.

Hoffman

Since 1951, he has been an assistant to the sales manager for Virginia-Carolina Chemical in Shreveport.

Velsicol

The following changes in organization were announced by Velsicol Chemical Corporation:

Joseph Regenstein, Jr., previously president, to chairman of the board. E. T. Collinsworth, Jr., previously executive vice-president, to president. John F. Kirk, vice-president and director of sales, was appointed to the board of directors.

Virginia-Carolina

Justin Potter of Nashville, Tennessee, a large V-C stockholder, was elected chairman of the board of Virginia-Carolina Chemical Corporation at a regular meeting of the board.

Mr. Potter's election followed the resignation of William C. Franklin, Baltimore executive, who had served as board chairman since his election in September, 1956.

In submitting his resignation, Mr. Franklin told the V-C board members that he had accepted the position of chairman "primarily to locate a capable management group and to assist in whatever way possible while this new group became familiar with the operations of the company."

"Feeling that this has been accomplished," he said, "I request that someone else assume the duties and responsibilities of chairman and that my resignation be accepted."

Mr. Franklin nominated Mr. Potter as the new chairman and his election was unanimous.

Mr. Potter immediately announced that the board planned no material changes in the company's organization.

Dr. William P. Boyer, director of research and development of Virginia - Carolina Chemical Corporation, has been named head of the company's chemical division, it was announced by William H. Wilson, president.

In his new position, Mr. Boyer will be responsible for the sales, marketing and production activities of the V-C chemicals division. He will continue to direct the company's research and development programs.

Dr. Boyer succeeds Russell L. Haden, Jr., vice-president and general manager, who has resigned to rejoin Dewey & Almy Chemical Company in Cambridge, Mass. Mr. Haden was general manager of the organic chemicals division of Dewey & Almy prior to joining V-C in December, 1957. He returns to that company in a new executive capacity.

John A. Watson and Fred G. Dilger have joined V-C as economic cost analyst and manager of the systems department respectively.

Mucci

Raymond J. Mucci has been appointed assistant to the general manager of the Naugatuck Chemical division, United States Rubber Co., it was announced by Earle S. Ebers, vice president and general manager.

Mr. Mucci, formerly a member of the chemical division's commercial development department, will be engaged in general forecasting and business research assignments.

Lumpkin

W. Doss Lumpkin has been named to the position of senior sales engineer by Dr. R. E. Reitmeier, president of Catalysts and Chemicals, Inc., Louisville, Kentucky.

Du Pont

Dr. Frank G. Keenen admires the gold watch received by Ove F. Jensen at a banquet in his honor last month. Mr. Jensen, sales specialist on ammonia liquors for the fertilizer industry, retires July 31 after

Keenen Jensen

a 25-year career with Du Pont. Dr. Keenen, recently named associate director for the Polychemicals Department's sales service laboratory, joined Du Pont in 1926. Between them, Dr. Keenen and Mr. Jensen have 57 years' service with Du Pont.

Francis Jornlin, sales manager for the nitrogen products section of Du Pont's Polychemicals Department, announced Dr. Philip B. Turner, specialist on ammonia liquors in the northeastern section of the country, will succeed Mr. Jensen and transfer to the Indianapolis area. James W. Lewis will succeed Dr. Turner and operate in the northeastern section; Mr. Lewis, a sales technologist, joined Du Pont in 1948.

Turner

changes

Davison Chemical

Chemical technical service activities of the Davison Chemical Company division of W. R. Grace & Co. have been consolidated under F. Emerson Ivey, Jr., as manager, to provide better coordination and exexchange of technical information and widened technical service. Mr. Ivey reports directly to R. D. Goodall, vice-president and general manager of chemicals. Previously technical service men reported to product sales managers.

Mr. Ivey came to Davison in 1948.

Poulsen Co.

The Poulsen Company, Los Angeles, engineers and manufacturers of materials processing and handling equipment, has been appointed direct factory agents for the W. J. Fitzpatrick Company, Chicago, designers, developers and exclusive manufacturers of FitzMill industrial processing machinery.

"The equipment manufactured by The Fitzpatrick Company and that produced by manufacturers we now represent, and our own production facilities make it possible for us to solve any industrial processing problem, however large or small, anywhere in the world," stated Al Poulsen, president of Poulsen Company.

Amchem

The stockholders of the American Chemical Paint Company, Ambler, Pa., manufacturers of metalworking and agricultural chemicals, voted to change the name of the company to Amchem Products, Inc., at its annual meeting.

According to Leon Cherksey, chairman of the board of this 44-year-old company, "the use of the word paint in the original name of the company had become a source of confusion since none of its hundreds of products are classified as paint."

American Potash

Merger of Lindsay Chemical Co. into American Potash & Chemical Corp. was voted April 29 by shareholders of both companies.

Lindsay will be operated as the Lindsay Chemical Division of American Potash.

WE ARE HERE TO STAY

THE MANITOWOC SHIPBUILDING INC. HAS BEEN HERE SINCE 1903 MANUFACTURING NOT ONLY SHIPS—SUBMARINES, BARGES AND TANKERS BUT DUST COLLECTORS, DRYERS, COOLERS AND SPECIAL EQUIPMENT. OUR LIST OF SATISFIED CUSTOMERS READS LIKE **WHO'S WHO** IN AMERICAN INDUSTRY.

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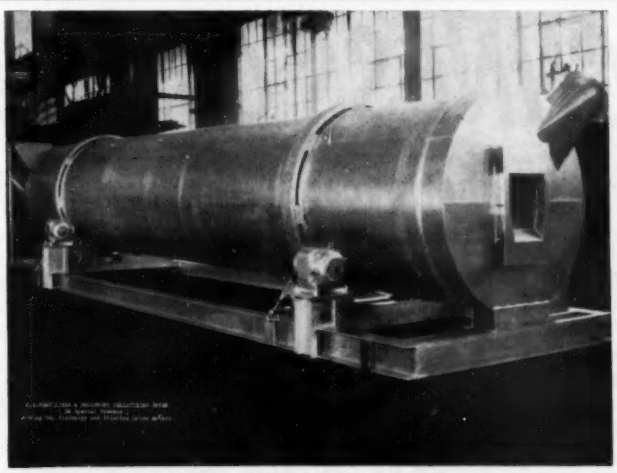
WE REALIZE IT IS A SPECIAL BUSINESS OF ITS OWN, SO WE HAVE SET IT UP AS A SEPARATE DIVISION, STAFFED BY MEN EXPERIENCED IN THIS FIELD. THEIR TIME AND RESEARCH IS DEVOTED EXCLUSIVELY TO YOUR BUSINESS.

THE SAME POLICY WE HAVE FOLLOWED FOR 55 YEARS WILL APPLY TO THIS DIVISION.—THE POLICY OF BUILDING GOOD EQUIPMENT, OF SUPERIOR, ADVANCED DESIGN, AND THEN BACKING IT UP, TO ASSURE YOU SATISFACTION.



THIS IS THE POLICY THAT HAS ENABLED US TO SATISFY THE UNITED STATES GOVERNMENT AS WELL AS THE MAJOR CHEMICAL, CEMENT AND PAPER COMPANIES ALL OVER THE WORLD.

OUR FERTILIZER DIVISION IS STAFFED WITH EXPERIENCED MANUFACTURERS OF FERTILIZER PLANTS AND EQUIPMENT WHO UNDERSTAND YOUR PROBLEMS.

See July Ad for Another C. E. First — A New Process, Tests Completed

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MANITOWOC SHIPBUILDING, INC.
MANITOWOC, WISCONSIN, U. S. A.

Meet the TOUGHNESS Champ!

Clupak* paper Multiwall Bags: Tougher because they Stretch!

New, improved multiwalls made with the revolutionary Kraftsman Clupak stretchable paper are today's modern way to package your products. In storage, shipping and use, these bags take more handling punishment *without failing* because Clupak paper *stretches* under impact. This is TOUGHNESS, a new measurement of strength and value in multiwall bags.

Lighter but tougher Clupak multiwall bags are available *now!* Pasted Open Mouth, Pasted Valve, Sewn Valve, Sewn Open Mouth and Stepped-End types are in production and they're priced the same as old fashioned bags made of regular Kraft paper. On your next carload order, let us include a trial shipment of 5,000 Clupak bags. See for yourself why they're the new TOUGHNESS champs of the industry. *Call or write:*

NEWS FOR THE INDUSTRY. West Virginia's entry into the multiwall bag field brings with it 70 years of paper leadership. The experienced multiwall sales representatives formerly with the businesses acquired have been retained to continue bringing you the best in multiwall bag service.

Four modern manufacturing plants and eight district sales offices will continue to serve you: in the North, under the direction of Sheldon Y. Carnes, Regional Manager, and Tom L. Jones, Regional Sales Manager; and in the South, under the direction of Jason M. Elsas, Regional Manager, and J. Frank Greeley, Regional Sales Manager.

You can expect the same fine products and service—plus the assurance that the experience and resources of one of the nation's leading paper manufacturers is now available to you.

*Clupak, Inc.'s trademark for stretchable paper.

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230 Park Avenue, New York 17, N.Y.

Better Weighing Practices
Will Save You TIME and MONEY

by Arthur Sanders

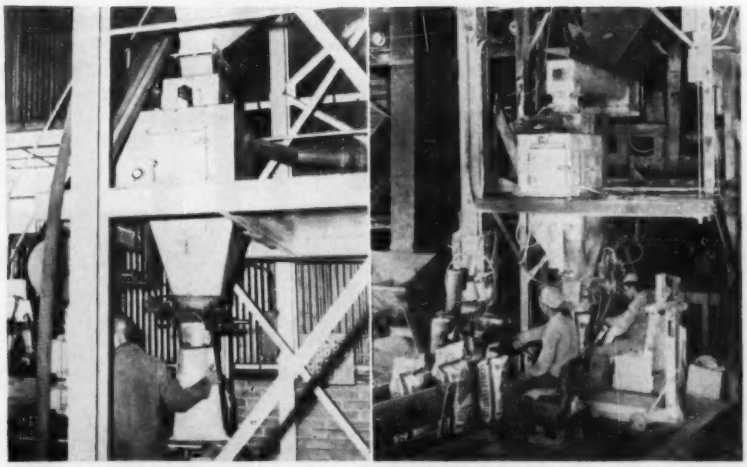
This article on weighing check-points was written by Mr. Sanders, who is executive secretary of Scale Manufacturers Association, Inc. especially for the June issue of Commercial Fertilizer.

Nothing is of more importance to the profit picture of the commercial fertilizer industry than accurate weights. No equipment you own has a bigger influence on whether you finish the year in the black than the scales over which you weigh your products.

This relationship between accurate weights and profits should be obvious. Isn't nearly everything you purchase bought on the basis of weight? Aren't all your sales on the basis of weight? Of course, you say. Then it is obvious that fertilizer producers can't afford to take chances with the weighing devices that determine the correctness of the weights they receive and the weights they sell. They are "money machines" just as is the cash register in the food store. Regardless of the low per-pound value, look at the percentage value which even small weighing errors are of the total dollars of materials you buy and of products you sell in a year.

The fertilizer industry, as every executive active in it knows only too well, is intensely competitive, with a traditionally low margin of profit. It hardly needs to be stated that every possible profit leak should be plugged. Yet one source of profit losses—weighing mistakes—is often overlooked.

It is, therefore, a pleasure to accept, the invitation of the editors of Commercial Fertilizer to suggest some ways in which you might review your own weighing operations. If you carefully study yours, chances are you'll find room for improvement. I should like to preface these suggestions with the thought that, in the future, it is inevitable that weights and measures departments of the various states will become more and more active in the fertilizer field. Up until this time, there has been, by and large, the thought that commercial fertilizer, as a product, is inexpensive per pound and that more pressing matters should occupy the weights and measures inspectors' attention. However, this feeling is disappearing. In the future, unquestionably fertilizer manufacturers will find their bagged output much more carefully scrutinized for variations from the declared net weight.



Left: Net weighing for accuracy and speed with hopper bagging scale; filled bags removed by belt conveyor.
Right: This bagging scale at Knoxville Fertilizer Co. accurately fills an average of 16½ 100-pound bags per minute with pulverant goods. It is fed by a 9-inch single-screw feeder.

The weights and measures officials of the state and local governments are an understanding and tolerant group. They know the difficulties with which producers are faced in bagging fertilizer. However, they do expect the bag weights to average very close to the full net weight with no substantial variations from the declaration carried on the bag.

In recent times we have seen considerable evidence to indicate that the weights and measures departments are reviewing their enforcement efforts in areas of agricultural products and products used on farms. In August, 1957, T. C. Harris, Jr., Virginia Supervisor of Weights and Measures, said their fiscal year 1957 report showed 39% of the fertilizer lots checkweighed were short weight, and ordered "off sale"—to be rebagged. The overweights are usually as large, but since it is not economical for the producer to rebag and recover the overweight of fertilizer, they are seldom condemned.

Mr. Harris went on to say: "Needless to say, we are concerned about the bad weighing practices being employed in the bagging of fertilizer, as our report indicates. At the present time plans are being made to employ maximum effort to correct the condition."

Another official described fertilizer weighing as about the worst, due partly to dust and corrosion, but mostly to the fact that producers do not appreciate the large losses that weighing mistakes can bring to themselves and their customers. He pointed out that the industry is inclined to disregard weighing accurancy due to the low value per pound, and to take more interest in bagging speed than in accuracy.

This is to suggest that with proper weighing equipment and proper weighing procedures, both speed and accuracy are possible. Many improvements have been made in filling scales in recent years. Have you considered whether your own weighers may be obsolete? In considering this, we suggest that you take a good look at the modern weigh fillers that are on the market.

The fact that weighing in the fertilizer industry is complicated by dust and corrosive material, as well as a necessity for high-speed weighing, makes the job more difficult. But, of course, these problems can and are being overcome with modern equipment, provided it is oper-

ated by persons who **understand** the need for accurate weighing, and provided the equipment is given proper maintenance and reasonable care. If you are not taking advantage of the improved equipment which is available, it should be worth your while to do so and benefit profitwise.

Are Scale Errors Important?

You may ask, just how important is bagging accuracy? It can be very important and to cite an example, consider the facts George L. Johnson, Kentucky Director of Weights and Measures, reported in 1957. He said that in a checkweighing campaign on bagged fertilizer and seed in several principal localities of his state they found over $1,500,000 of short weights. They did not condemn fertilizer overweights due to the low unit value, but they required all lots found substantially underweight on the average to be returned to the producer and rebagged. That in itself is a costly penalty. The cost of transportation two ways and the cost of rebagging are a large percentage of the total value of the delivered product. Even more serious may be the loss of good will with distributors and customers.

With weights, it comes down to a simple proposition. Weight determinations should be correct — or rather they must be within the legal tolerances. The tolerances allowed for buying and selling scales used in plants is about 1/10 of 1%. Otherwise, you are either giving away money (if you give overweight) or you are taking money from your customers, however unintentionally, if you give underweight. This latter course is likely to lead to trouble with weights and measures inspectors and a consequent loss of good will from dealers and customers.

But, in actual practice, weighing errors are likely to be pretty much a "heads I lose, tails the other guy wins" proposition. You don't make friends by giving more than the legal weight because nobody knows about it. On the other hand, give short-weight, and you may be in trouble.

Quality and Quantity Controls

There are at least five important areas where accurate weighing is essential in the commercial fertilizer industry:

1. In quality control—in turning out a uniformly good product and avoiding wastage.
2. In making sure your valued customers receive full weight.
3. In avoiding loss of profits through inadvertent overweight.
4. In checkweighing receipts—to make sure that you really get everything you are paying for.
5. In checking shipping and freight charges.

Quality control is important in the commercial fertilizer industry where a bad batch may lose a lot of customers. There is a premium on consistency.

Quality control in batching with modern, dependable scales not only provides consistency in the execution of your proportioning formulas (and constant standard of product) but, with proper weight control to eliminate mistakes, it can avoid wasteful excesses in the portions. Efficient weight controls can be obtained to fit the particular circumstances of the plant. They can be manual, semi-automatic, or fully automatic. But, always, weight controls will provide the very best measuring controls known to man.

To the extent desired, proportioning can be done automatically with complete records to show what was done. The system can even be triggered by punched cards with the formula punched in, to supply the proper ingredients at the right time. No place there for our human mis-

TOP: This 8'-0 x 60'-0 rotary dryer removes excess moisture and completes the granulation. Dryer is oil heated.

RIGHT: The lifters, with their unique cup-like design and their staggered arrangement in the unit, cause the granules to be evenly distributed.

A McDERMOTT 8 x 60 DRYER INSTALLATION AT THE SAGINAW PLANT OF THE AMERICAN AGRICULTURAL CHEMICAL CO.

Sound Engineering Economy and Consistently Superior Performance Are Built Into All McDermott

DRYERS—COOLERS—AMMONIATORS

McDermott Bros. Co.

Allentown, Pennsylvania

takes.

To Checkweigh Your Receipts

There is another major area in which accurate weighing is highly important to you: you should have accurate receiving scales so that you can checkweigh for yourself — independent of the weights your suppliers may bill you for—to see that you actually get the full weight for which you pay.

This is particularly important in the fertilizer industry where your profits stand or fall on weights—the raw materials bought and processed and the finished product bagged and shipped. Your weights are significant, both coming and going.

Let's look at it this way. You pay dollars and cents for tons and pounds of materials you buy. The total cost of your raw material receipts is a very big bite of your production costs each year. You want to be sure that the tons and pounds you get total up to the amount of dollars you pay. That would seem to be pretty elementary, but surprisingly many executives take on trust the billed weight of the things they buy and make no independent check of their own.

That is a dangerous practice. Mistakes do happen, even in the best-run businesses. With all the leaks that can occur between the bins of your supplier and your bins, the odds are that the mistakes will be against you. You can't process and sell materials you don't receive. And, it is not unthinkable your suppliers' scales may be incorrect. Unless you checkweigh, you may never know. To paraphrase: Remember, the dollars you save may be your own.

And, of course, it goes without saying that you should regularly save your weight records as evidence of the quantities you actually receive — to support adjustment claims of excessive bills. It's surprising, too, how receiving weights will improve when it becomes known that the receipts are being checked on accurate scales.

Accurate weight control is just as important in the things you **buy** as it is in the things you **sell.**

In conclusion, I hope that this brief resume is enough to convince you that it pays to become "scale conscious" by keeping and using proper and well maintained scales—and to make sure your help does, too. No operation you perform bears a more vital relationship to your business reputation and financial stability than do your weighing procedures.

MURIATE OF POTASH for the PLANT FOOD INDUSTRY

THIS symbol stands for high-grade coarse and uniform Muriate of Potash (60% K_2O minimum). Southwest Potash Corporation provides a dependable supply of HIGH-K* Muriate for the plant food industry.

*Trade Mark

Southwest Potash Corporation

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MARKETS

ORGANICS: Supply of natural organic ammoniates for shipment immediately and over the next 60 days is critically short of demand. Producers of leather nitrogenous tankage are completely committed for their production, with two major producers sold out for the new season June/forward. Prices range from $3.00 to $3.40 per unit of ammonia, bulk, f.o.b. origin for July through December shipment, and $3.50 to $3.65 January/forward.

SEWAGE SLUDGE: Two major producers of bulk sewage sludge in the Midwest and Southwest are currently completely booked through the middle of June at prices of $3.10 per unit of ammonia, and 50¢ per unit APA, f.o.b., and $2.75 per unit of nitrogen, and 50¢ per unit of APA, f.o.b.

CASTOR POMACE: Supply position is fairly comfortable, but in recent weeks buying activity has increased at $37.50 per ton in bags, f.o.b. Eastern seaboard shipping point. Imported material is indicated at around $5.00 per unit of ammonia in bags, CIF Florida ports.

DRIED BLOOD: Unground sacked blood is indicated around $7.50 to $7.75 per unit of ammonia, f.o.b. Chicago area, and around $6.50 in the New York area. Prime interest is from the feed trade.

POTASH: During April, potash producers shipped muriate and sulphate of potash from domestic sources in a volume more normal than during previous months. New prices are announced for the new season, which are somewhat lower than those prevailing during the current season.

Unfair Competition?

A manure so elegant that it comes beautifully wrapped in gift packages is announced by a Norwalk, Conn., firm.

Signing himself "Originally yours," J. Llewellyn Brooks, II, proprietor of Sunny Pastures, Strawberry Hill, in Norwalk, writes:

"Vive le jardin! Vive les fleurs! Et les legumes! . . . with Toujours Manure, the incomparable 100% cow manure which puts a green thumb into gracious gardening."

The fashionable boon to gardeners comes in a sparkling 2-lb. white and gold foil, ribbon-wrapped gift pack ready for immediate sprinkling. Price: $.50 each.

Continues Brooks II, "We at Sunny Pastures are proud of our quality manure . . . it is one of Connecticut's greatest glories."

Toujours Manure comes pleasantly perfumed.

"Each vitamin-packed, well-bred fertilizer bud is loaded with chlorophyll derivatives and is poised ready to spring into action for you," the brochure states. "All living things love its gentle action on tired plant blood."

The proprietor recommends gift packages of his product for "birthdays, holidays, anniversaries and bread-and-butter gifts."

One might add, "You'll always be remembered if you give Toujours Manure." . . . at least you won't be forgotten soon!

GROUND COTTON BUR ASH: Prices on this potash material, primarily in the form of carbonate of potash, continue in most areas to compare favorably on a delivered basis with domestic sulphate of potash.

SUPERPHOSPHATE: Superphosphate, both triple and normal, moved in good volume during April and continues to move as weather conditions have improved. Prices remain steady and more or less unchanged.

AMMONIUM NITRATE LIMESTONE: Prices continue steady and volume improved to normal levels during April and first half May, although the overall shipments for the season are about 20% behind the same period of last season.

AMMONIUM NITRATE: Total movement in the Southeast is behind the same period of last season, but demand is improving. Movement in the Midwest has been quite heavy and satisfactory to the producers.

GENERAL: The outstanding feature of the present market is the shortage of natural organic ammoniates. Superphosphate is in comfortable supply as is also potash. Weather conditions improved in recent weeks, and fertilizer manufacturers hope to make up in the remainder of the season shipments which had been delayed because of bad weather.

CF-Staff Tabulated TONNAGE REPORTS

FERTILIZER TONNAGE REPORT (in equivalent short tons) Compiled by Cooperating State Control Officials and Tabulated by COMMERCIAL FERTILIZER Staff

STATE	April		March		Jan.-Mar. Qtr.		July-December		January-June		YEAR (July-June)	
	1958	1957	1958	1957	1958	1957	1957	1956	1957	1956	1956-57	1955-56
Alabama	------	292,964[1]	184 939	196,033	246.637	291,116	172,721	174.623	808.900	872,550	983.607	1,042.416
Arkansas	89,621	64,536	48,121	74,693	75,919	120 907	62,752	59,915	265,265	299,172	325,150	359,471
Georgia	262,313	322,144	75,684	140,374	146,308	221,375	269.529	253,559	980.824	988,454	1,234,383	1,244.422
Kentucky	-- --	105,114[1]	47,648	76,853	139,541	173,850	88,771	90,284	451,083	441,481	541,367	529,600
Louisiana	59,782	48,929	83,742	45,682	105,459	81,709	64,192	71,129	200,277	217,343	271,406	273.688
Missouri	133,859	60.716	39,050	141,780	79.445	219,689	335,312	331,343	460,487	444.230	791,830	800.471
N. Carolina	------	488,082[1]	279,057	314,179	438.009	534,774	199,446	216,234	1,300.353	1,324,267	1,516.587	1,649.449
Oklahoma	15,766	10,624	9,903	15,308	20,160	27,868	51,436	54,509	52,836	65.854	107.345	135.396
S. Carolina	172,505	199,381	206,229	233,862	286,778	393,741	116,874	122,929	694,571	743.670	817,500	863.617
Tennessee	65,668	86,741	66,080	29,825	84,114	48,649	135,717	141,181	383 457	378.626	549.253	532.886
Texas	100,423	72,506	93,130	100,795	163,525	205,547	213,801	202,406	392,770	372,695	595,176	566,399
California	(reports compiled quarterly)				253 545	264,270	------	412,747[1]	663,484	639,377	1,079,748	1,001,554
Virginia	(reports compiled quarterly)				218,551	277,124	140,784	154,075	600,158	599,111	754,223	761,820
Indiana	(reports compiled semi-annually)						284,959	305,917	781,268	807.981	1,087,185	1,063,049
Iowa	(reports compiled semi-annually)						------	85,147[1]	------	315.329[1]	------	445,329[1]
Michigan	(reports compiled semi-annually)						------	184.763[1]	------	443,908[1]	------	*
New Hampshire	(reports compiled semi-annually)						3,966	3,253	15,730	13,168	18,983[1]	*
Washington	(reports compiled semi-annually)						------	55 709[1]				76,660[1]
Oregon	(report issued annually)						45,063	62,147	138,926	120,871	201,073[1]	*
TOTAL	899,937	865,557	1,133,583	1,369,384	2,257,991	2,860,619	2,185,323	2,243,504	8,190,389	8,328,850	10,654,760	10,824,238

------(not yet reported) * Not compiled [1] Omitted from column total to allow comparison with some period of current year.

New Grade List Announced in N. C.

North Carolina's State Board of Agriculture has made three changes in the official list of fertilizer grades for 1958-59 and modified a restriction on the registration of specialty grades.

Changes in the list of grades for general crops consisted of substituting 0-13-36 for 0-20-40 and deleting 13-13-13. One grade, 4-8-12, was added to the list of grades for tobacco.

Prohibition against registering as a specialty any grade which has appeared on the official list during the past five years was modified to apply only to fertilizer to be offered for sale in packages exceeding 25 pounds in weight. It was also further amended to apply to any such grades offered for sale as a "customer's mix."

State Agriculture Commissioner L. Y. Ballentine said the Department of Agriculture has received some complaints that manufacturers are advertising their fertilizers to contain minor elements without any guarantee as to the amounts of such elements in the fertilizer.

North Carolina law permits a manufacturer to guarantee minor plant food elements with the permission of the commissioner of agriculture by and with the advice of the director of the experiment station. But the law does not make such guarantees mandatory. It is possible, he said, for a manufacturer to claim a minor plant food without guaranteeing it, and satisfy the labeling provisions of the law by having only the slightest trace of the element in his product.

A number of fertilizer manufacturers objected to any change in the law to require guarantees of such minor elements on the grounds it would make it necessary for them to reveal trade secrets. Others expressed the opinion it would be a desirable provision and afford protection from unscrupulous competition. No formal action was taken on the matter.

A farm machine that uses the hydroponic method of growth has been put on the market by Buckeye Corp., maker of chicken incubators. Housed in a 120-sq.ft. aluminum building, it can match 15 to 25 acres of cattle pasturage by growing 45 tons of fresh grass a year at about $13 a ton. Lit by fluorescent lamps, it works night and day. Price: $2,880.

Wyoming Tonnage Off Slightly During 1957

Wyoming's 1957 fertilizer deliveries were off slightly from the 1956 total, according to a report from B. R. Hardin, director of the State Agriculture Department's Division of Markets.

Sales for the calendar year 1957 amounted to 10,236 tons as compared with 10,619 tons for the preceding year. Both years showed a decline from the 1955 tax report tonnage of 11,584 tons, but 1957's 10,236 tons indicated an encouraging trend when compared with the 1952 total of 8792 tons.

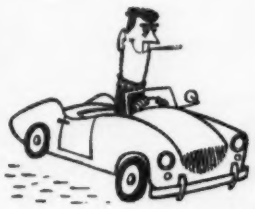
OBITUARIES

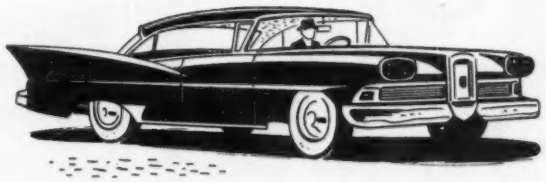
Howard Berry, 72, who retired in 1951 as vice-president and treasurer of Mathieson Chemical after 28 years of service, died April 27 in Clearwater, Fla.

Sir William Lennon Raws, 79, who recently retired as board chairman of Imperial Chemical Industries of Australia and New Zealand, which he built into one of Australia's top industries, died in Melbourne April 20.

H. A. Thomas, Jr., general manager Fruit Growers Supply Co., Los Angeles, April 21.

NO MATTER WHAT SIZE OPERATION YOU HAVE . . .





THERE'S A **BLUE VALLEY** GRANULATION UNIT ENGINEERED FOR YOUR PLANT!

Blue Valley units incorporate economy and operating flexibility along with the capacity and quality production you desire. So, when considering granulation, think first of Blue Valley . . . the company with more units operating than any other. Write, wire, or call . . .

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LAURENT & N. TAYLOR
TOPEKA, KANSAS
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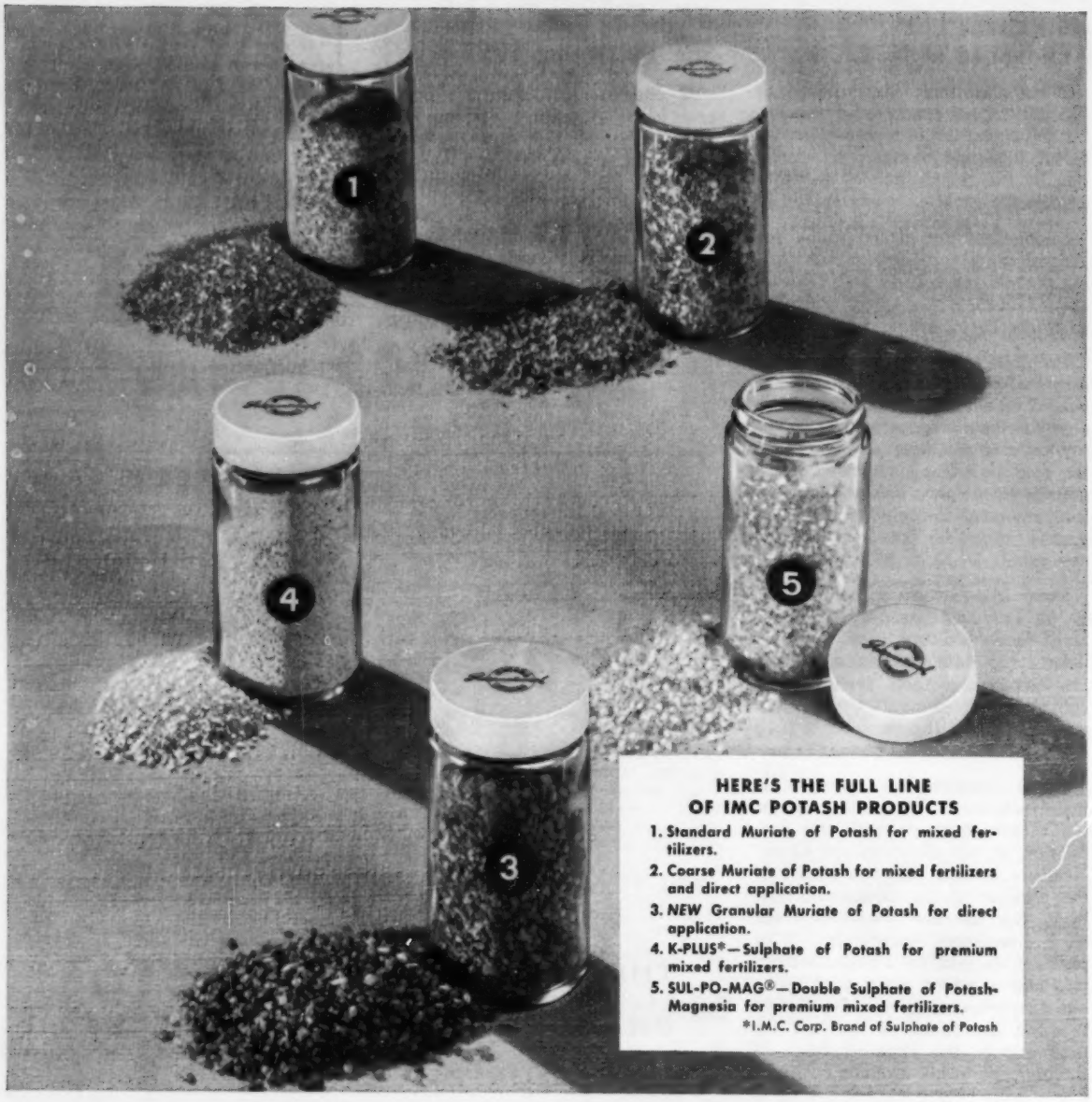
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HERE'S THE FULL LINE
OF IMC POTASH PRODUCTS
1. Standard Muriate of Potash for mixed fertilizers.
2. Coarse Muriate of Potash for mixed fertilizers and direct application.
3. NEW Granular Muriate of Potash for direct application.
4. K-PLUS®—Sulphate of Potash for premium mixed fertilizers.
5. SUL-PO-MAG®—Double Sulphate of Potash-Magnesia for premium mixed fertilizers.
®I.M.C. Corp. Brand of Sulphate of Potash

NOW...5 potash products from one source for all your potash needs

International Minerals and Chemical Corporation now offers a full line of *five major potash products* for agriculture, to meet the specific requirements of the fertilizer manufacturer.

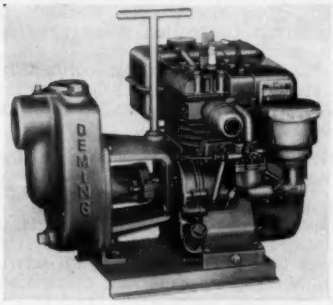
The addition of a new granular muriate of potash for direct application is another step forward in our program of continuing to provide a *complete* service . . . for all your potash needs.

For consistent quality and flexible formulation, depend on this full line of potash products, backed by personalized sales and technical service from experienced people at your nearest district sales office . . . Atlanta, Ga., Chicago Ill., New York, N.Y., and Shreveport, La.

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

POTASH DIVISION . . . . . 20 N. WACKER DRIVE, CHICAGO 6, ILL.

Equipment News Roundup . . . .



Liquid Fertilizer Pump

The Deming Company, pump manufacturer, has produced a single sheet bulletin on a new self-priming, portable, gasoline-engine driven centrifugal pump specially designed to handle liquid fertilizer and solutions.

Bulletin No. 3307 gives data on the engine, pump shaft, support head, liquid end, stuffing box, impeller, diffuser and shaft slinger. Dimension and performance curves are also given on the reverse side of the informative bulletin. Other Deming Company centrifugal pumps are also shown.

For your free copy, write to Deming at Salem, Ohio.

Automatic Motor Base

Automatic Motor Base Co., Windsor, N. J. has announced two new models of motor bases for maintaining the proper amount of tension in belts. Sizes range from ¼ to 500 H.P.

Tension is effected by a spring which also compensates for a considerable amount of belt stretch before any readjustment is necessary. When required, readjustment is made while operating under load merely by turning a screw, and initial pulley alignment is always maintained.

Compact, pancake construction makes these bases particularly adaptable to applications where space is at a premium. They can be mounted in any position, and the direction of pulley rotation is immaterial.

These bases are claimed to reduce maintenance and down-time, increase the life of belts and bearings, and sustain maximum machine output.

Descriptive literature is available from the manufacturer.

Ace Hard Rubber Gear Pump

For low-volume, positive-displacement pumping of acids, alkalies and other corrosives, a new Ace GKF gear pump features all-hard-rubber casing and gears, Kel-F bearings and rubber-covered shaft. Typical applications are pumping from tank to process, pumping on acid tower work, and direct agitation of solutions.

Discharge is continuous, positive, and in direct proportion to speed. Complete with standard ½ hp, 875 rpm. motor, the pump delivers approximately 12 gpm. maximum. Maximum head is 120 ft. (52 psi.).

The Ace hard rubber compound used in this new pump is corrosion-resistant, self-lubricating, and wear-resistant. Suction and discharge connections are tapped for 1-inch standard pipe.

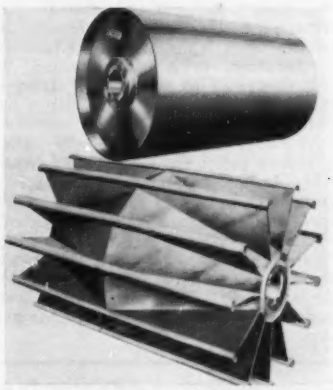
Details on the new pump, together with Ace plastic pipe, valves and fittings, available from American Hard Rubber Company, Div. of Amerace Corporation, Ace Road, Butler, N. J.

Bradley Catalog On Mills

Bradley Pulverizer Company now offers latest information and changes in its line of semi-fine and fine pulverizing screen and pneumatic roller mills. Illustrated in two colors, a new 30-page catalog, Number 63, contains detailed drawings, specifications, capacity, construction and maintenance facts on its screen-type mills, as well as complete information on its three pneumatic mills.

Bradley Mills are particularly efficient for grinding phosphate rock, agricultural limestone, talc, and perlite.

The new #63 catalog may be obtained by writing Bradley Pulverizer Company, Dept. 17, Allentown, Pennsylvania.



Continental 'Taper-Lock' Hubs

The Industrial Division of Continental Gin Company has announced a new line of welded steel pulleys featuring "Taper-Lock" hubs. Welded steel construction provides maximum strength combined with economy of weight.

Crown or straight-faced pulleys can be furnished, and are shipped from Birmingham and other strategically located warehouse stocks.

Welded steel wing-type self-cleaning pulleys with "Taper-Lock" hubs are the newest addition to their extensive line of materials handling equipment. Self-cleaning pulleys assist in belt alignment by preventing build-up of material on the pulley face. Continental "Taper-Lock" hubs offer a most satisfactory type of clamp hub at an economical price, and give the equivalent of a shrunk-on fit on the shafting while permitting easy assembly and dis-assembly.

Complete information on these new pulleys is available from the manufacturer, Industrial Division, Continental Gin Company, Birmingham 2, Alabama.

Barber-Greene Belt Feeder

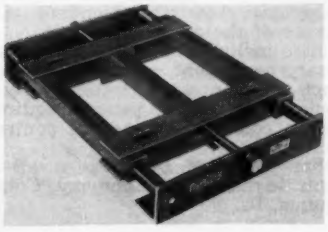
Offering a capacity range from 5 to 550 t.p.h., as well as many other engineering and design features, the newly announced Barber-Greene Model F-8 Belt Feeder has been designed for any application where a high degree of accuracy is necessary in feeding ore, chemicals, fertilizers, etc.

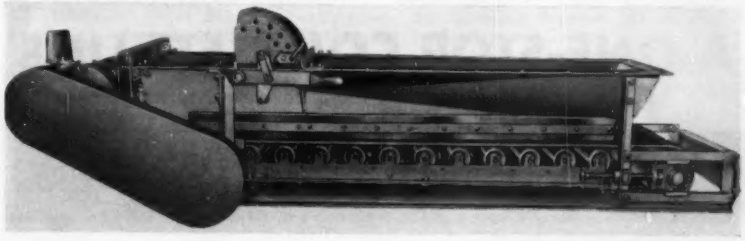
A pre-engineered, packaged unit, the Model F-8 is shipped completely assembled and ready for immediate installation in a track or truck dump hopper, beneath elevated bins or in either a steel or wooden bulkhead.

Two drive arrangements are available, both assuring consistent accuracy and fine control of feeder output. Adjustment of capacity is made by varying the gate opening, by alteration of the best speed, or by both means. Manual controls may be mounted on the reducer or remote controls may be installed at any point in a plant setup.

Exceptionally low head room permits easy mounting of the F-8 beneath bins.

Information on the F-8 feeder may be obtained from any Barber-Greene distributor; from Barber Greene Company, 400 No. Highland Ave., Aurora, Illinois, or from Barber-Greene Canada Ltd., Barber-Greene Road, Don Mills, Ontario.





Equipment News . . .

O-M Lawn Sprayer

A new sprayer-on-wheels just introduced by Forward House division, Olin Mathieson Chemical Corporation, is a two-wheeled device designed to spray full strength liquid fertilizer or liquid lawn insecticide.

Automatically mixing one gallon of liquid lawn food or liquid insecticide with 50 gallons of water, the sprayer will feed 2,000 to 3,000 square feet of lawn without refilling.

All the gardener has to do is place a gallon jug on a hook on the sprayer, insert a plastic tube, attach the garden hose. The aluminum lawn feeder is light, easy to push and turn.

Tank Detector-Controller

Industrial Nucleonics Corporation has announced their AccuRay Tank Level Detector-Controller. New technological advances, they say, have resulted in lowering the costs of this instrument to make it competitive price-wise with conventional float-level controllers.

No part of the instrument extends into the tank or vessel, as it is installed completely outside the tank. Free from fouling by process material, it is readily accessible for maintenance.

The AccuRay Tank Level Detector-Controller can be used in either of two modes of operation: installed so as to provide a relay closure signal when the level rises above or falls below the level of the detector; or installed so that both a high level and a low level signal can be provided from one instrument. Accuracies are available to = 1/16".

Circuitry has been simplified to eliminate vacuum tubes, transistors, and other amplifying devices. A thyratron controlled relay provides the output signal.

For more information, contact Industrial Nucleonics Corporation, 1205 Chesapeake Avenue, Columbus 12, Ohio.

OPW-Jordan Loading Assemblies

New 24-page Catalog F-32R describes OPW-Jordan's Loading Assemblies and accessory products. It contains detailed product descriptions and photos, along with useful engineering information: dimensional drawings, installation layouts, and selection instructions. These flexible, no-leak piping devices for loading and unloading liquid storage tanks, tank cars, etc., are widely used in chemical plants and other fluid handling installations. Available in many sizes (2" through 6"), styles, and materials. Write for free 24-page Catalog F-32R—Jordan Industrial Sales Division of OPW Corp., 6013 Wiehe Road, Cincinnati 13, Ohio.

Stoker's New Fact File Folder

A new fact file folder, containing ten technical data sheets that describe and illustrate all current models of Stoker Packers for filling valve and open mouth bags and drums, has been issued by H. L. Stoker Company.

Also included is information pertaining to two new Stoker packaging developments: the Micro-Metric Feeder System which provides maximum accuracy in weight packaging, affording precision within one ounce on 50 lb. containers at normal production rates . . . and the Stoker Model "B" Settler, an effective method of settling the bag while weight accuracy is fully maintained, making it possible to settle material during the entire filling cycle without transmitting vibration into the weighing mechanism of the packer.

A fact file folder can be obtained by writing to H. L. Stoker Co., 111 S. College Ave., Claremont, Calif.

Fuller's Airmerge Blending

A 16-page technical bulletin, B-2, describing Fuller Company's new Airmerge System for exact blending of dry pulverized materials is now available.

Photographs and cut-away line drawings show how dry materials are thoroughly homogenized by combining quadrant blending and pulsated aeration. Other illustrations detail the system's various blending methods: the batching scheme, and continuous operation.

Text material explains the system's ability to blend materials that differ in bulk density and fineness. Diagrams show the blending tolerance of the mixed materials.

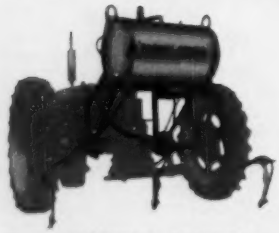
Also included is a list of the necessary equipment, such as the compact aeration units, outlet valves, fittings, manifolds, piping requirements, compressors and the control cabinet.

For copies of Bulletin # B-2, write to the Fuller Company, Catasauqua, Pa.

'SPEEDY SPREAD'

FOR THOSE WHO WANT QUALITY IN FERTILIZER SOLUTIONS EQUIPMENT

General Metals, Inc., manufactures a complete line of standard and custom equipment needed for use of fertilizer solutions, including field applicators, transport units, tanks, accessories, and complete engineering and installation services. Write for complete catalogue.



'SPEEDY SPREAD'

Tractor-Mounted Field Applicator

Complete with 75 or 100 gallon, North Carolina approved measuring tank, rugged saddles, tractor brackets, 21' steel boom, sub-surface attachments, all fittings and valves and a choice of four pumps. Unit handles Nitrogen Solutions, complete liquid fertilizers, herbicides and insecticides.

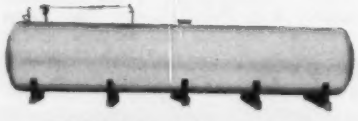
Trailer-Mounted Nurse Tanks

Here is the type of transport you have been looking for! Transports consist of trailer, saddles, 1000 gallon tank, fittings, hose, pump or compressor, front-end jack, trailer hitch, tandem axles and all necessary equipment, ready to fill and roll.

'SPEEDY SPREAD'

Model TPD-200 Trailer Applicator

Trailer TPD-200 equipped with metering pump with dial the rate of application. For those who want the very best in metering pumps, accuracy, and widest rates of application with the least trouble. Rugged trailer; aluminum, steel or stainless steel tank, pressure or non-pressure; steel booms. Ideal for top dressing pastures, small grain or row crops by use of drops.



TANKS OF ALL TYPES

General Metals manufactures a complete line of aluminum, steel and stainless steel tanks from 30 gallons to 22,000 gallons, both pressure and non-pressure types. Pressure tanks built to 30 PSI working pressures according to A. S. M. E. specifications.

A ONE-STOP COMPLETE LINE

CALL, WRITE, OR WIRE today for full information

GENERAL METALS, INC.

858 Goldsboro St. Greensboro, N. C. Phone 4-5451

G-M 'Nurse Tank' Transport

General Metals, Inc., manufacturers of equipment for nitrogen solutions and liquid fertilizers, are now in production on a new trailer-mounted "Nurse Tank" transport. With many new features and advantages over the wagon-type transport, this transport is designed for hauling nitrogen solutions and liquid fertilizers from storage tanks to the farm and out to the field. Serving as a source of supply for trailer or tractor applicator units and used in putting the solutions on the field, the unit is especially designed for nitrogen solutions, but may also be used for transporting insecticides, weed killers, and other liquid products.

Tandem axle design smoothes out road shock and field irregularities. The heavy, rigid transport unit consists of trailer, saddles, tank, fittings, hose, gauges, air compressor, front end jack, trailer hitch, and all necessary equipment, shipped ready for immediate use. Equipped with a high quality 1000-gallon alluminum tank, all parts and fittings are of non-corrosive material and of durable, heavy-duty construction. Performance of valves and safety devices is unaffected by corrosion or crystalization of solutions.

Reinforced baffles are used in the tank to reduce sloshing of solution, and a liquid level gauge shows the amount of solution left. Transport units are provided with all safety features needed to protect the tank, power unit and operator, and provide long lasting, trouble-free operation.

For literature, prices and other information on the General Metals Trailer-Mounted "Nurse Tank" Transports, write for Bulletin 49-255 to General Metals, Incorporated, 858 Goldsboro Street, Greensboro, N. C.

Lawn Mower Spray Device

Mo-An-Spray Co., Neodesha, Kansas, has introduced a new time saving applicator for lawn chemicals. Attaching to any blade-type rotary power mower, the new distributor system permits feeding chemicals to the lawn while mowing. The Mo-An-Spray unit can be fastened to old or new model mowers. Liquid fertilizer and weed killers can be used.

New Loader by Case

A new 4-wheel drive, rear-wheel power-steer tractor shovel, designated the W-9 Terraload'r, is featured in Case Bulletin CTS-111, just issued. Complete specifications and illustrations of job applications are included.

The 12-page, 3-color catalog shows interchangeable buckets from 1¼ cu. yd. to 2¾ cu. yd., for digging or handling various types of materials. Operating advantages of balanced design, which takes into account foreaft and lateral weight distribution, as well as power requirements, are explained and illustrated. Other benefits, such as safety-engineered short, rigid lift-arms pivoted ahead of operator, automatic sight-leveling gauge, operator-designed cockpit, etc., are also pointed out.

For free copy, write J. I. Case Co., Racine, Wis., for Bulletin CTS-111.

Thayer Bridge Breaker

A new type vibrator to break bridging of materials in storage bins, supply ducts and containers has been developed by Thayer Scale Corp. While vibratory means are employed, the vibration is not applied directly to the side walls of the hopper or duct, but rather to screens which are inserted within the chamber and extend downward to the lower opening or discharge outlet.

By this arrangement, a relatively small mass of steel is agitated to break the bridge of the material between the side walls of the container. Such equipment has found much use in weighing operations where a constant flow is required between storage hoppers and scale feeder.

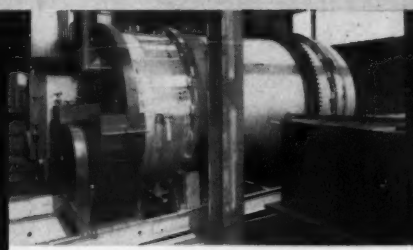
Equipment News . . .

The Thayer Bridge Breaker can be furnished in various sizes and shapes to suit existing hoppers and ducts.

Thayer can also furnish complete hopper sections incorporating built-in bridge breaker units with flanged inlet and outlet for attaching to existing storage bins and ducts. Bridge Breakers can be furnished in mild steel, stainless steel, and teflon coated. Unit can be furnished for Class I Group D or Class II Group G operation. Survey sheets for this equipment are available upon request from Thayer Scale Corp., Thayer Park, Pembroke, Mass.

▸Ammoniators* ▸Coolers ▸Dryers
▸Elevators
▸Granulators*
▸Conveyors
*TVA Licensed Manufacturer

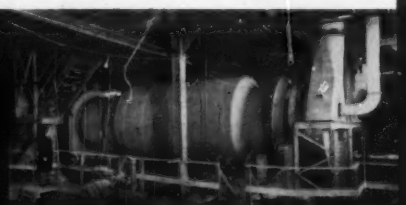
FOR THE FERTILIZER INDUSTRY



Renneburg
Continuous
Combination
Ammoniator-Granulator

SAVES MONEY—Costs less to buy . . . costs less to operate • SAVES TIME—Ammoniation is going on at all times . . . no loss of time in charging or discharging • SAVES SPACE • HIGHER RATE OF AMMONIATION • FLEXIBLE—any retention time can be acquired . . . speed of rotation and bed depth can be easily increased or decreased.

Renneburg
DehydrO-Mat
Dryer



Built in a wide range of sizes, the DehydrO-Mat Dryer, though comparable in price, out-performs conventional dryers of similar volume. Compact, it is easy to install in a minimum of space. The varying diameter cylinder regulates air and material velocities . . . controls temperature drop and product retention time . . . assures gentle drying.

Other chemical and fertilizer processing equipment manufactured by Renneburg includes: • Ammoniators • Granulators • Dryer Furnaces • Complete Air Handling Systems • Pilot Plants • DehydrO-Mat Combination Dryers and Coolers

Write for Free informative bulletin: "Renneburg Continuous Granular Fertilizer Equipment"

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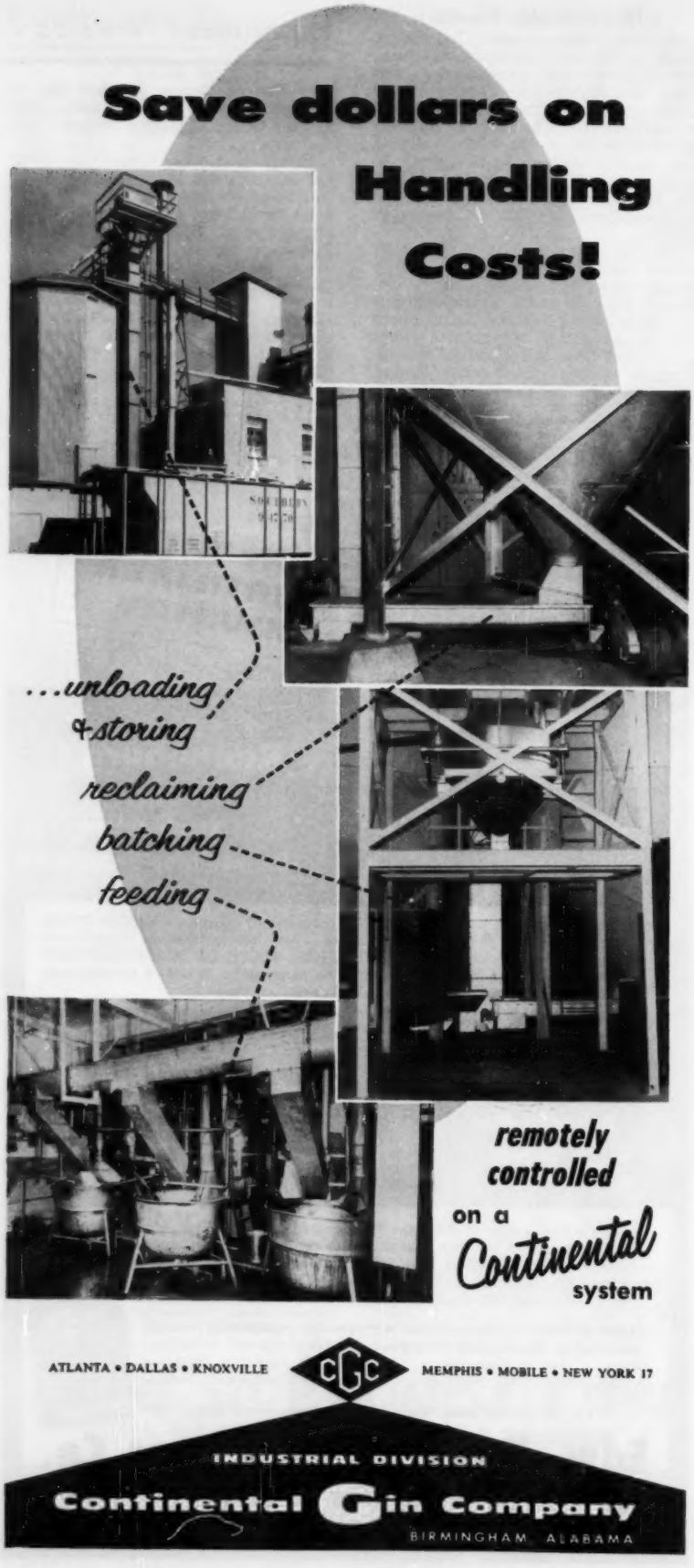
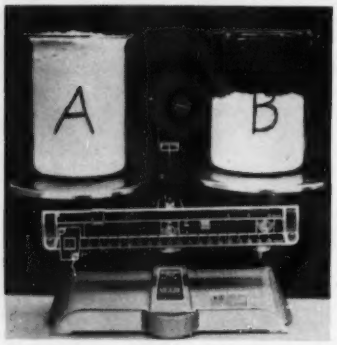


Equipment News . . .



Comparison of material, at same weight, shows reduction of bulk to one-half through use of densifier.

Compacter from Huber

A new method plus equipment for de-aerating and compacting, or densifying, fine powdered materials have been developed and patented by J. M. Huber Corporation. According to Huber, the densifier makes possible the production of more salable, less dusty products, and affords a positive way of reducing packaging materials and transportation costs.

Finished density may be readily varied and reliably controlled at any level up to the maximum that can be achieved with the material involved.

This equipment offers advantages of a continuous process, and removes entrained or occluded air from fine, loose, powdered materials by the simultaneous application of vacuum filtration and mechanical compression to a regulated and continuously moving product stream. In actual commercial practice, the density of fine materials has been increased as much as 100-200%.

Manufacture and use will be licensed by Huber to any company interested. Huber has a pilot densifier for processing sample materials for study and evaluation by those interested in the process. Complete information on the equipment and process may be obtained from J. M. Huber Corporation, P. O. Box 831, Borger, Texas.

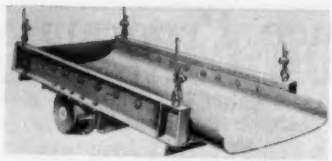
Soil Conditioning Agent

Improved conditioning of problem soils by home gardeners and farmers is claimed for a new type soil conditioning agent developed by The Commonwealth Engineering Company, industrial research organization of Dayton, Ohio.

Designed for use by manufacturers of commercial soil additives, the new discovery, according to the company, adjusts to the individual needs of specific soils—a custom soil conditioner tailored to the special requirements of predominately clay, sand or silt materials.

Stated to be no more costly than other soil conditioning agents, but considerably more effective, this new development actually comprises only a single ingredient whose molecular weight is varied to obtain the action desired in various soils.

Additional information can be had from the manufacturer.



Link-Belt Vibrating Feeder

A new vibrating feeder has just been added to Link-Belt Company's extensive materials handling line. Applicable to the handling of a wide range of materials, the all-new MC motorized counterweight feeder is capable of feeding direct from bin or hopper at a controlled, uniform rate. The compact low-headroom unit can be installed as an integral package in almost inaccessible locations.

Unbalanced arrangement of the weights imparts a straightline oscillating or vibrating motion to the trough, lifting the material upward and forward along the trough. Feeding rate is readily controlled by varying the hopper opening, trough slope and drive thrust angle. The MC feeder can be cable and spring-suspended under a hopper or spring-mounted on supports from the floor.

Twelve sizes are stocked by Link-Belt in standard width of 2, 3 and 4 feet and lengths from 5 to 8 feet, with capacities up to 250 tons an hour.

Further information is available in leaflet 2669, which can be obtained from your Link-Belt district sales office or by writing Link-Belt Company, Dept. PR, Prudential Plaza, Chicago 1, Ill.

Bauer Processing Equipment

Application data on Bauer processing equipment is available in Bulletin No. 58, a condensed 4-page catalog recently released by The Bauer Bros., Co., Sheridan Avenue, Springfield, Ohio.

For pulverizing, fiberizing, granulating and blending various materials, the catalog illustrates and lists typical uses of Bauer hammer mills, double and single disc attrition mills, single and double roll crushers and magnetic separators. Bauer's specialized laboratory facilities and engineering services are also described in the catalog.

Copies are available by writing.

Swivel Stacker Loader

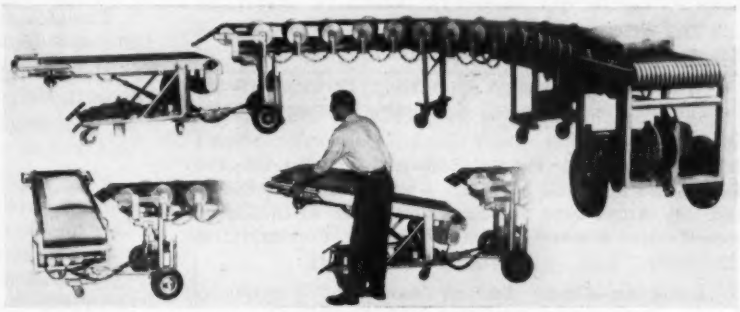
A high speed stacking belt perfected for use with standard Power-Curve box car and truck loaders makes push-button one-man car loading of bags a reality. The operator simply guides the bags as the conveyor stacks to full height anywhere in the car.

Equipment News . . .

Capable of continuous operation at 30 bags per minute with one operator who requires little training, the stacker and conveyor are push button controlled from the same station, advance or retreat under shuttle power without interruption of flow. The loader carries bags through box car door and into the end of the car, or around pillars, corners, through aisles and doorways.

Stacker unit can be disconnected from flexible Power-Curve conveyor. Stacker hoist is push-button hydraulic, lifts end of belt from 18 in. to 72 in. above floor. Swivel casters swing the stacker which uses a rough-top belting to "shoot" bags into place.

For further information write to Power-Curve Conveyor Company 2185 South Jason Street, Denver 23, Colo.



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Pacific Northwest's July Conference Program

Ninth Annual Fertilizer Conference

Hotel Bannock, Pocatello, Idaho, July 8-10

July 8, Morning—G. O. Baker, Chairman

Welcome and Introduction—Jack Wursten, Simplot Soilbuilders.

Effect of Date of Seeding Winter Wheat on the Nitrogen Efficiency—Harley Jacquot, McGregor Land & Livestock Company.

Residual Nitrogen Studies on Wheat Production—Roger Harder, University of Idaho.

The Effect of Nitrogen Fertilization on Yield and Quality of Hard Red Winter Wheats Grown on Dryland in Southern Idaho—Paul J. Fitzgerald, Agronomist, USDA; T. H. Siddoway, Soil Scientist, USDA; and J. V. Mannering, Assistant Agronomist, University of Idaho.

The Effect of Fertilizers on Wheat Quality—M. G. Klages and C. A. Watson, Montana State College.

Nitrogen Fertilization and Other Factors Affecting Lodging of Field Corn—C. E. Nelson, Prosser Irrigation Experiment Station.

The Use of Our Present Research Knowledge in Predicting the Potential Fertilizer Use on Irrigated Pasture and Hay Areas Used For Beef Production in the Seventeen Western States—Forrest M. Willhite, Colorado State University.

Luncheon—Grant Braun, Master of Ceremonies; Address: "Agriculture in Ecuador"—George Woodbury, University of Idaho.

July 8, Afternoon—Norman Hibbert, Chairman

TVA Program of the Pacific Northwest—Merle Sweitzer, Washington State College.

Economic Use of Nitrogen and Phosphorus in Relation to Sugar Beet Production—Ted Gessel, Amalgamated Sugar Company.

Relation of Fertilization and Soil Fertility to Forage Production in Western Washington—Darrell O. Turner, Western Washington Experiment Station.

Fertilizer Trials in the Columbia Basin Project—A. I. Dow, Prosser Irrigation Experiment Station.

Progress Report on the Residual Influence of Phosphate Fertilizer Applied to a Calcareous Soil—J. V. Mannering and G. O. Baker, University of Idaho.

Residual Phosphorus Studies in Oregon—A. S. Hunter, E. N. Hoffman, and John A. Yungen, Oregon State College.

Factors Affecting Potassium Availability in Arid Soils—R. B. Farnsworth and M. J. Hallam, BYU.

Barbecue—Pocatello Country Club.

July 9, Morning—Charles Bourg, Chairman

Survey on Factors Influencing Farmer Use of Fertilizer—Delbert Rucker, Director of Publications, NPFI.

National Plant Food Institute Program for the Pacific Northwest—F. Todd Tremblay, Northwest Representative.

Fertilizer-Insecticide Mixtures for Idaho—Roland W. Portman, University of Idaho.

Chelates and Their Application to Minor Element Problems—(Speaker not confirmed)

Factors Affecting Quality of Potatoes—Richard E. Ohms, University of Idaho.

July 9, Afternoon

Field Trip—Sterling Schow and Albert Mylroie, Agricultural Extension agents, in charge of tour; Tour includes luncheon in field, review of research in progress at the Aberdeen Branch Experiment Station, and visit to Neibaur farm to observe sprinkler irrigation setup and fertility results.

Social Hour—Sponsors, Allied Trades

Banquet, Good food—no speaker; Bill Bergerson, Utah-Idaho Sugar Company, Master of Ceremonies.

July 10, Technical Session—H. B. Cheney, Chairman

Soil and Plant Studies on Sick Alfalfa in Northern Idaho—J. V. Jordan, University of Idaho.

Nutrient Status Survey of Alfalfa in Southwestern Montana—H. A. Kittams, Montana State College.

Evaluation of Methods for Determining the Nitrogen Supplying Power of the Irrigated Soils of Northern Utah—J. R. Wight and J. P. Thorne, Utah State University.

Chlorosis Studies—R. L. Smith and Wynne Thorne, Utah State University.

Report and Discussion on Tissue and Soil Testing.

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EQUIPMENT FOR SALE

Two complete Sturtevant grinding and sacking installations suitable for Meat Scrap, tankage or fertilizer, capacity of each 10 tons or more per hour. Each mill stand complete with hoppers, conveyors, magnetic separators, bucket elevators, vibrating screens, 2 rotary drum cleaners, two mixers, one automatic exact weight sacking stand and two manual sacking stands. One Sturtevant dust collector. Inland Products, Inc., P. O. Box 926, Columbus 16, Ohio.

FOR SALE: Nearly new 3-scale stainless steel open-mouth Bemis bagger and "V" bag conveyor. C. Roy Curtis & Son, Inc., Marion, N.Y.

FOR SALE: 2-7'6" x 55' and 80" x 65' Rotary Dryers, 3 - Louisville 6" x 50' Rotary Steam Tube Dryers, also Mixers, Storage Tanks, Screens, Elevators. Send us your inquiries. BRILL EQUIPMENT COMPANY, 2401 Third Ave., New York 51, N. Y.

LIQUIDATION SALE: (8) Louisville Rotary Steam Tube Dryers, 6' x 50', 6' x 30', 6 x 25. Also Dewatering Presses, Davenport No. 1A, No. 2A, No. 3A, Louisville 8-roll 36". Spiral Ribbon Mixers, 336, 100, 75, 15 cu. ft. Storage Tanks from 1,000 gallon to 20,000 gallon, steel, stainless steel, aluminum. Perry Equipment Corp., 1426 N. 6th St., Philadelphia 22, Pa.

HELP WANTED

SUPERINTENDENT OLD-LINE FERTILIZER CONCERN: Located Southeast. Must be under 50 years of age and thoroughly familiar with all phases of medium-sized plant operation including ammoniation, mixing and shipping as well as plant and machinery maintenance and repair. Desire to supervise granulation unit will be helpful in future planning. All replies will be held in strictest confidence. State all pertinent information in replying such as age, fertilizer experience, marital status, state of health, and availability date. Salary range necessary should be stated. Box # 37, % Commercial Fertilizer, 75 - 3rd St., N. W. Atlanta 8, Georgia.

SULPHUR SALES: Immediate opportunity in sales of crude sulphur for established producer. Proven sales ability essential, preferably on sulphur, heavy chemicals, or related fields. Background of production experience in sulphuric acid, pulp and paper, helpful. Location: Progressive Southern city. To investigate the position in strictest confidence, please include personal data, experience, education, and salary requirements. Box 36, % Commercial Fertilizer, 75 - 3rd St., N. W. Atlanta, Ga.

SITUATIONS WANTED

SITUATION WANTED: College graduate, twenty-five years fertilizer experience. Past ten years manager of 40 to 50 thousand ton dry mix plant. Will relocate. Box # 30, % Commercial Fertilizer, 75 Third St. N. W., Atlanta 8, Ga.

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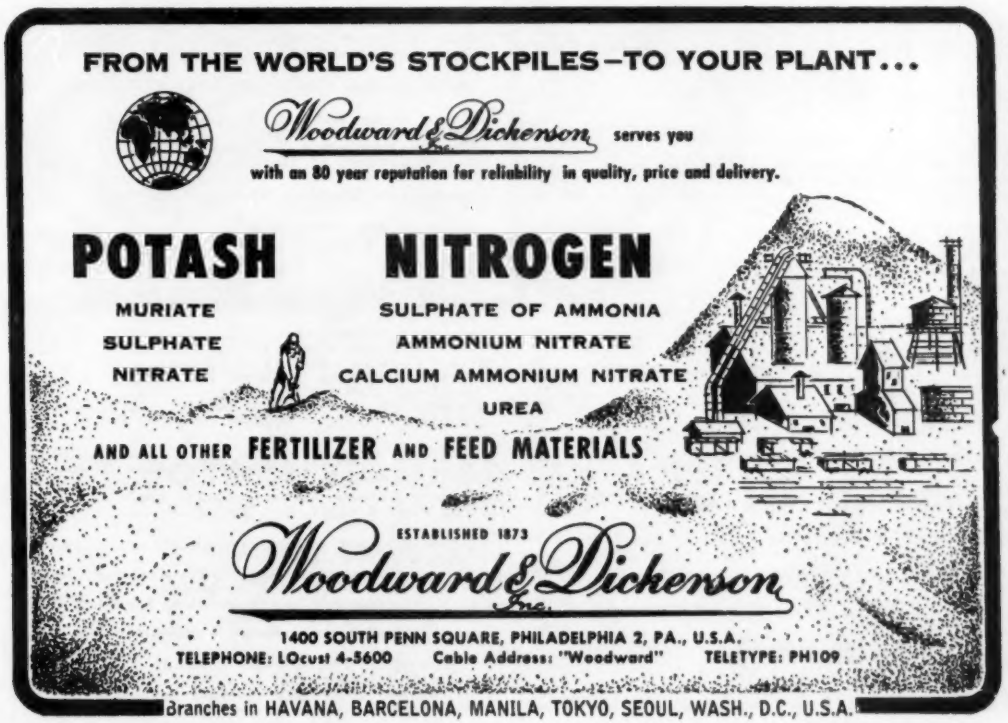
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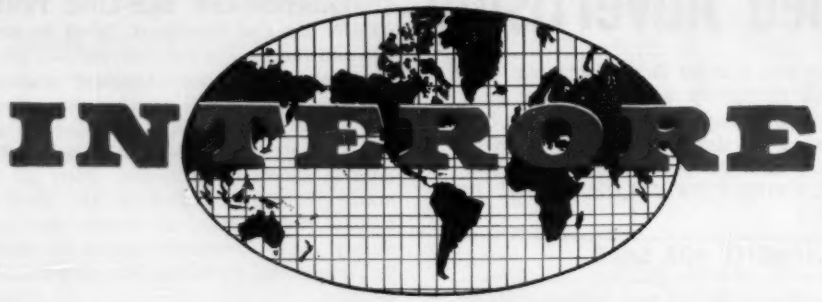

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